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ABSTRACT

The document reports the major problems faced by school administrators in dealing with the handicap of hearing impairment in children, with the intent to stimulate improvements in methods of assessing the needs of this population and in systems of delivery of services. The first section on the problem of misunderstanding hearing impairment in children, covers the importance of language acquisition, severity of the language learning problem, differences in behavioral characteristics of hearing impaired children, and audiological terminology in relation to educational needs of children. Presented in the second section on identification services are statistical information on the magnitude of hearing impairment problems (including numbers and needs of the population by state) and descriptions of some current programs. The third section covers the problem of educational evaluation services and reports some model programs in evaluation and services as well as the role of the regional resource centers. Additional areas discussed are the training of needed personnel and the need for educational reform, with examples of regional programing and a description of the components necessary in a regional program. (IM)

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# 2.5 Million Children: The Invisible Handicap of Hearing Impairment

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## Preface

This document is by no means a research study. It is an attempt to focus on the major problems faced by school administrators in dealing with this obscure and greatly misunderstood handicap of hearing impairment in children.

There is a conviction among educators of the deaf that the education of the deaf child who must learn his native language without hearing it spoken is the most difficult of all educational handicaps and very different from the education of other children. There is now growing concern that the impact of almost any hearing loss on the young child has been grossly underestimated.

The problems are acute. The scope and severity of the situation was best described at a national conference on the education of the deaf in Colorado Springs, which emphasized that the problem of hearing impairment in children must be viewed by the public with the same critical concern as we now view heart disease and cancer (Silverman, 1967).

It is the intent of this report to stimulate action within states to uncover the needs of hearing impaired children, and to unite in a national effort to close all gaps in our present systems of delivery of services which perpetuate this tragic and unnecessary waste of the learning potential of the nation's children.

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## Introduction

This presentation is both a plea and a challenge to school administrators, teachers, parents, special educators, diagnosticians, medical personnel, and concerned citizens to help identify the problem of hearing impairment in children. The premise of this paper is that hearing is the basic sensory avenue for the learning of a child's first language and all related communication systems and that the invisible handicap of hearing impairment can cause serious damage to these learning processes in children. The severity and scope of this damage is little recognized or understood either by the public or many professionals.

Hearing impairment cuts across all handicapping conditions and takes its silent toll of the learning potential, not only of children with known hearing loss but also among the retarded, the learning disabled, the child who cannot read, the gifted, the school dropout, the emotionally disturbed, the physically handicapped, and others. This damage could be prevented.

One attempt to focus attention on this problem was through the Babbidge report on The Education of the Deaf published by the Advisory Council to the Secretary of Health, Education, and Welfare (1965). Two of the major recommendations of this national Advisory Committee were specifically directed to state departments of education, stating that:

1. The federal government be requested to allocate planning grants to states for the hearing impaired similar to the planning grants previously allocated for the mentally retarded.
2. A national conference be convened of local, state, and federal government officials and professional personnel to formulate necessary plans for state action.

Since that time, the federal government has carried out an intensive campaign of program stimulation and development through special workshops, national conferences, development of media research, data collection, regional and national program services, demonstration centers, teacher preparation, and special financing. Despite these types of federal support, there have been only minimal attempts within states to grapple with this complex problem on a statewide basis. There is now a growing concern that the actual service to hearing impaired children has worsened

The National Research Conference on Day Programs for the Hearing Impaired summarily stated:

> Today our nation faces a crisis in the education of its hearing impaired children . . . . The proliferation of scattered day classes, frequently supervised by educators who are not knowledgeable in the field of deafness, staffed by poorly qualified teachers, and limited in their educational opportunities has aroused educators and parents alike. Few states have recognized the problem of educating hearing impaired children beyond narrow limits and still fewer have developed comprehensive state plans. (Mulholland & Fellendorff, 1968, p. 3)

Concern is now heightened among educators of the deaf by new trends in integration (mainstreaming), noncategorical grouping of children, and mandatory special education laws, some stipulating preferential placement of all handicapped children, including the deaf, in local special education programs. This trend "threatens to erode the education of the deaf still further" (Turecheck, 1972, p. 1).

These issues are of great concern. In a state where many of these problems have been and still are tragically familiar, and where provisions for mandatory legislation were passed in 1965, it is now evident that these laws in themselves did not jeopardize the education of the hearing impaired. In fact, quite the opposite occurred. The laws forced the professionals to unite their efforts in a common cause; to take a long hard look at the total problem of hearing impairment in children; to seek help from the state's most powerful statutory agency serving children, the Illinois Commission on Children; and to engage in an intensive struggle to develop a coordinated interagency plan of comprehensive programs and services. Because of the mutual needs expressed by other states in this respect, information from the Illinois study, as well as studies and survey reports from other states, will be presented throughout this document.

The fundamental issue today is the effective delivery of services to children, to make certain (a) that the hearing of all 51 million of the nation's children is in the best condition possible for learning and (b) that appropriate programs and services are provided for all those with identified hearing loss. Major problem areas limiting the effective delivery of service include the following:

1. Misunderstanding of the severity of the problem of hearing impairment in children.
2. Fragmenting of identification services.
3. Shortages of adequate evaluation services.
4. Training of personnel to meet the needs of states.
5. Need for educational reform.

## Problem I: Misunderstanding of Hearing Impairment in Children

The recommendation of the recent National Study on Current Practices in the Education of Hearing Impaired Children was "to wage an intensive campaign to inform persons in responsible positions with children about the problem of hearing impairment" (Fricke & Murray, 1969, p. 22). The concept emerging in today's education is a

new focus on this auditory learning process in children and a new understanding of what happens to children throughout their school years when this process is thwarted.

## IMPORTANCE OF FIRST LANGUAGE ACQUISITION

Experiences of most of the general public and public school personnel seem to have been with the hearing impaired adult, whose hearing decreased after a lifetime of normal learning and living. It seems virtually impossible to grasp the concept that when hearing impairment strikes the young child, it is an entirely different matter, since this child is still deeply engrossed in his first language learning process. Although we seldom think of it, the young child spends most of his first year of life in learning through listening. Through sound, he begins to learn direction, distance, speed, intensity, and meaning; he learns to sleep through some sounds and attend to others; and, most importantly of all, he begins to learn his native language. This he does through hearing the emotional tones of the human voice, spending endless hours in enjoyable, effortless practice; listening to his own babbling and perfecting the production of what we commonly term vowels, consonants, rhythm patterns, inflections, and words; progressing to a complex language system, which becomes the basis of all future communication skills for learning and living (Tervoort, 1963; Myklebust, 1960; McNeill, 1966).

The impact of hearing impairment on the young child is almost beyond comprehension. References to the encompassing effects, extrapolated from comprehensive publications on hearing impairment, appear below.

> The most serious effect of deafness in young children is its interference with the normal development of language which is the vehicle of all human thought and learning. (Illinois Commission on Children, 1969, p. 6)

> Hearing is mandatory. We cannot cease hearing even while asleep . . . . Nature provided for one of the distance senses to be functioning constantly and the advantages to self preservation are obvious. (Myklebust, 1960, p. 373)

For the general public and for many parents of deaf children, it is the speech aspects of the problem that command major attention. The child cannot talk; therefore, the mistaken conclusion is reached that deafness is a speech problem and this is followed by the even more mistaken assumption that a hearing aid and speech lessons will make everything right. (Levine, 1960, p. 30)

> It is the belief of many educators that without early auditory stimulation, many moderately hearing impaired children would, by the age of six or seven, be behaviorally undistinguishable from profoundly deaf children. (Levitt & Nye, 1971, p. 83)

> Findings indicate that even *mild* hearing impairment might result in educational problems for many children. The identification and treatment, medical and educational, of hard of hearing children could well be one of the most neglected problems of the public schools. (Quigley, 1968, p. 19)

School personnel must be helped to understand, then be held accountable for, alienating misconceptions contributing to mismanagement of hearing impaired children in regard to (a) the severity of the language learning problem, (b) the differences in behavioral characteristics, and (c) the meaning of audiological terminology related to educational needs of hearing impaired children.

## SEVERITY OF THE LANGUAGE LEARNING PROBLEM

To demonstrate the severity of language deprivation, and the difficulty of learning one's first language primarily through visual systems, samples of the written language of deaf children of various age levels are given below:

Age 7 years: I see ball
Age 9 years: He has a dolls many
Age 11 years: I see a chair to school
Age 13 years: A little baby doll sat in a chair and they will go for walking
Age 15 years: He needs to show another your homes family
Age 17 years: The boy's wondering to put some furniture on the table

(Northwestern University, 1965)

From these samples, the "interference" of deafness with normal development of language becomes clear. Also clear is the breakdown in the educational processes of the language of reading, writing, thinking, speaking, concept formation, and acquiring knowledge, a situation that may exist for the rest of the child's life. Some deaf youth do achieve high levels of language acquisition and reading skill, but the majority have reading scores far below their intellectual abilities (Wrightstone, Aronow, & Muckowitz, 1963; Reis, 1971).

In referring specifically to deaf children, linguist McNeill (1966) emphasized that language learning should begin as early as possible in order to maximize the normal capacity for learning one's first language, a process which peaks at 2 to 4 years and declines steadily thereafter, possibly disappearing altogether as a special capacity by adolescence.

These statements seem to have equally grave implications for a large number of hard of hearing children (those with partial hearing) who may also manifest serious gaps and confusions in the language learning process and who often experience years of delay before receiving critically needed special education assistance (Young & McConnell, 1957; Goetzinger, Harrison, & Baer, 1964; Kodman, 1963; Berg, 1970).

## DIFFERENCES IN BEHAVIORAL CHARACTERISTICS OF HEARING IMPAIRED CHILDREN

It is commonly believed that if one but speaks loud enough the hearing impaired child should both hear and understand what is said. This is an erroneous assumption. Behavioral characteristics of hearing impaired children differ greatly depending upon many factors. One of the most misunderstood relates to the type of hearing impairment. Lack of knowledge in this respect by professionals may be responsible for serious injustices to many children. Yet, in general, such

information has not been effectively transmitted to school personnel, who could begin to help the children.

There are three principal types of auditory impairment—which may coexist and which influence hearing function: One results in *reduced loudness* of sounds; another, in *reduced clarity;* the other, in *inability to perceive* or interpret sounds (Hiett & Stewart, 1968).

Reduced loudness resulting from damage to the outer or middle ear is termed *conductive hearing loss.* Greatest difficulties arise when the loss restricts the loudness of speech reception; failure to hear environmental sounds adds to the child's confusion. Such a hearing loss may cause the child to be under a constant strain to hear; he may hear only accented parts of words and miss much of what is said except under ideal situations. He may have fragmented, underdeveloped language, poor speech, faulty concepts, and frequently be labeled inattentive or stupid. While this type of hearing loss is widespread among school children, often it is not even suspected; or if suspected, there is frequently no one at the local level to give proper guidance. Yet, with early intervention through medical care, audiological evaluation, consideration of a hearing aid, and necessary supportive educational assistance, the child's ability to learn might be greatly improved or, in some cases, even restored.

Reduced clarity of speech reception, resulting from damage to the inner ear or nerve pathway, is termed *sensori-neural* or *nerve impairment.* A child with this type of hearing loss appears to hear well enough, but not to understand; again, hearing loss may be unsuspected. To this child, voice and certain other tones may actually be heard reasonably well, but speech reception may be greatly distorted or even unintelligible. This high frequency hearing loss is caused when the hearing loss damages very specific high frequencies within the speech range, blocking out certain speech components (usually sibilant sounds), while low frequencies controlling voiced vowel tones may be less affected and sometimes sound near normal. Thus, this selectivity factor may permit the child to recognize the low tone of the school bell perfectly, but it may prevent him from understanding or developing language because of the garbled speech pattern he hears. This seemingly inconsistent response of the child to sound obscures the hearing loss and may result in serious misdiagnosis and mismanagement even by otherwise competent diagnosticians. This child may be the most misunderstood of all handicapped children (Harford, 1964).

Inability to perceive or *interpret sounds* is said to result from dysfunction along pathways of the brain, including the cerebral cortex. It is termed *central impairment* or *central deafness.* Relatively little factual information is known regarding this disorder, but it is particularly disabling when it affects the reception of speech. Loss of loudness of sound is not generally significant, and thus central impairment is not a hearing loss problem in the sense of the previous two definitions. Since reduced loudness is not a primary factor, the value of a hearing aid remains controversial, but the value of early education cannot be overemphasized (Hiett & Stewart, 1968).

That all of these conditions have long been known to cause confusion seems substantiated by a report from a New York clinic, which found that 60% of a group of hearing impaired children had been previously diagnosed and referred as mentally retarded, aphasic, or emotionally disturbed (Darley, 1961). The same confusion exists today.

## AUDIOLOGICAL TERMINOLOGY IN RELATION TO EDUCATIONAL NEEDS OF CHILDREN

Another deterrent in providing service for children is caused by the misconceptions regarding audiologic terminology. Standard audiometric terminology, which probably was applied originally to classify degree of hearing loss primarily in adults, tends to minimize the educational needs when applied to children. Yet, use of this terminology seems in common use in describing hearing impaired children. These classifications of "slight," "mild," "moderate," "severe," and "profound" are confusing. A clarification of these terms, such as in Figure 1, is called for. For example, to say a child has a "mild" hearing loss does not cause alarm for the child's educational needs. Yet some children within this group might be hearing face to face conversational speech from a distance of only 3 to 5 feet and may miss up to 50% of classroom instruction. Children with a hearing loss termed "moderate" may hear speech only from a distance of one foot! (Davis & Silverman, 1970).

The hearing impaired child runs the double risk of an educational handicap because of the increased need for a new balance between auditory and visual systems of learning with the breakdown in the auditory system. The ability of a child to develop lipreading skills and to integrate this learned process into his total educational system is not a simple matter, considering that more than a third of spoken language is invisible on the lips and many speech elements and words look identical when spoken inaudibly. Note the same lip and mouth movements in *juice* and *shoes, white* and *one;* the similarity of *bye-bye, baby,* and *mama;* or the invisible nature of a sentence such as "He sat at his seat and studied."

It should also be realized that learning to use amplification and to understand the meaning of sounds and language is a difficult process requiring education and auditory training. And while great advances have been made in individual hearing aids and group equipment, amplification does not make hearing sound normal. For some children, amplification is not needed; for others, it may have great advantages; for still others, the benefits are less effective. A hearing aid in itself is not a cure-all for long term educational deprivation; habilitation or rehabilitation may sometimes be a laborious, life-long process.

Thus the child with impaired hearing may experience many changes and difficulties in his ability to use sound and vision to the fullest advantage; these changes may affect his educational, environmental and emotional life. The child runs the risk of experiencing a syndrome of handicaps including (a) interference with the learning process and emotional well being through a breakdown in the entire human communications system, (b) deprivation in utilizing environmental sounds which alert one to events, regulate one's

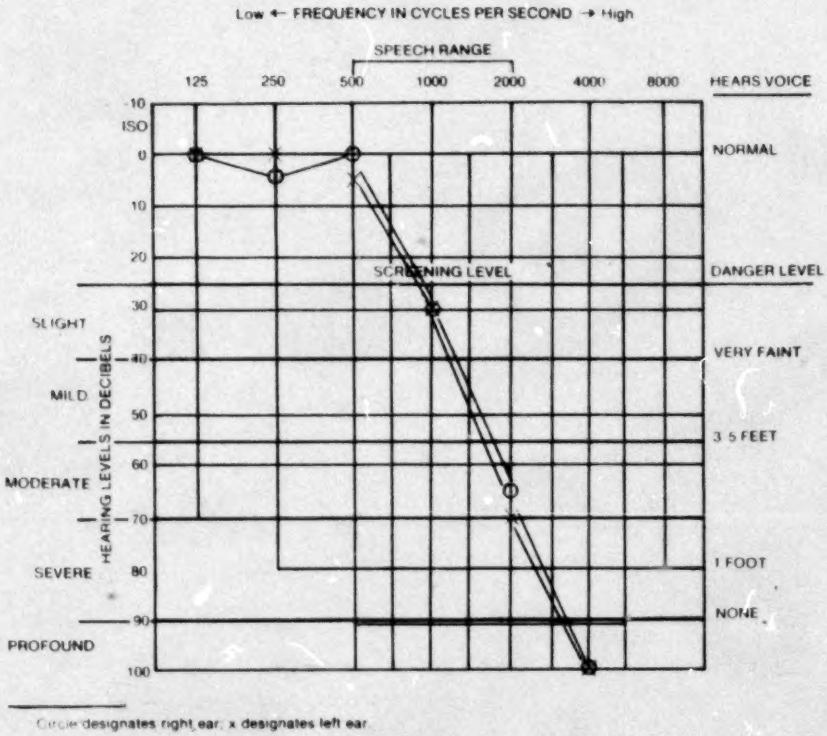



FIGURE 1. Audiometric record of one child, and educational implications. A simple clarification such as this of all audiometric records of school children might aid parents and school personnel in realizing the potential danger of hearing impairment to thousands of children.

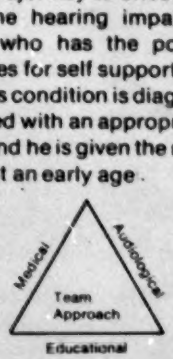
actions, and influence one's safety, and (c) limitations in ability to communicate through intelligible speech due to the breakdown in self monitoring communications systems. All are interrelated, but because the speech defect is the most obvious, parents and professionals often focus on this symptom and neglect the greater problems.

Because of the potential severity of the total problem, children with almost any degree of hearing loss must be considered in jeopardy unless proven otherwise. This would require an intensive reeducation of parents, educators, and medical and other professional personnel concerning this critical problem and an assessment of present delivery systems, early identification, medical treatment, audiological attention, and educational evaluation and programing. Perhaps no handicapped child could respond so well to proper management nor be so devastated by neglect as the child with the invisible handicap of impaired hearing.

Teacher comments reveal the struggle of the hearing impaired child in trying to cope with the classroom situation. The following are typical comments: "Will not pay attention. Won't listen. Hears when he wants to. Daydreams. Spends much of his time with his head in his hands. Slow—he never finishes his work. Emotionally disturbed. Withdrawn. Should see a psychologist. Constantly on report from school patrols. Does careless written work. Poor reader—he constantly loses the place. Unusually attentive. Can do better if he wants to. Can hear if he sees me."

## Problem II. Identification Services: The Need for a Three Dimensional Program

The amelioration of the effects of deafness is a goal worthy of the best talents and efforts our country has to offer. A major key to effective action lies in the hearing impaired child himself, who has the potential in most cases for self supporting adulthood if his condition is diagnosed, he is provided with an appropriate hearing aid, and he is given the necessary training at an early age.




(Levitt & Nye, 1971, p. 23)

In the United States we are far from providing such services to hearing impaired children. Hearing testing services, for early identification and referral for necessary followup services of evaluation, medical, and audiological treatment and education for hearing impaired children of all ages, are being conducted in many community health and school programs—at a cost of millions of dollars. These services are excellent in some areas, but national statistics now available seem to document the extreme need for a plan of coordination among these three basic disciplines of medicine, audiology and education. The question is, where are the nation's hearing impaired children and what is happening to them?

### MAGNITUDE OF HEARING IMPAIRMENT PROBLEMS

The magnitude of the problem of hearing impairment in children has been difficult to identify, according to data collection studies, because its invisible nature obscures the extent of the problem and minimizes the needs. Statistical information important to state and national planning includes the following:

1. Approximately 8.5 million persons in the United States have auditory handicaps, causing a loss in earning power of $1.5 billion annually (Davis & Silverman, 1970; National Conference on Sensory Training Aids, 1971).

2. Approximately 2.5 million of this total are school children with hearing loss outside the normal range. This is 5% of the 51 million school children enrolled according to statistics of the US Department of Health (Davis & Silverman, 1970).
3. Approximately 3% are expected to need medical referral, either for clearance that no medical help is needed, or for recommendations for further treatment (Hiett & Stewart, 1968).
4. From 50 to 80% of permanent hearing damage in children is reported to be preventable if children are identified early and receive prompt referral and effective medical service (Harford, 1964).
5. Approximately 1.7% of the school population being screened is expected to have hearing loss in the speech range (Eagles & Doerfler, 1964). The children need audiological and educational clearance or further audiological and/or educational services.
6. Between 255,000 (Davis & Silverman, 1970) and 500,000 children (Berg, 1970; Moores, 1971) are said to need educational scrutiny and/or service.

The target is therefore the 2.5 million children identified through screening as having any degree of hearing loss outside the normal range, and to determine the effectiveness of the present delivery system of clearance or services to them.

## EDUCATIONAL PROBLEM AREAS

A serious point of breakdown in service to children is the gap between case funding and educational referral. The need for *Educational Referral* observed by Illinois was emphasized by a series of studies revealing both inadequate hearing testing services and inadequate educational referral and followup of children. This resulted in state legislation and policy reform through the Child Hearing Test Act, 1969; The Rules and Regulations of the Illinois Department of Public Health, 1972; and the Rules and Regulations of Special Education, Office of the Superintendent of Public Instruction, 1973.

1. A state questionnaire to determine the extent of coverage, and the quality of hearing testing service (1962) revealed that over 50% of the school districts did not have regular programs; there were no statewide standards for regularity or methods of testing; testing was done by persons representing 10 different occupations; of those administering tests, 21% had no training; 10% did not notify parents or physicians regarding the child who failed; two-thirds of the test equipment was not calibrated; and only half of the persons making educational recommendations were in the field of education. In no case did an educator of the hearing impaired participate in making educational recommendations.
2. Neglect in educational followup of elementary children was revealed by the director of special education (Elgin, 1967) who checked existing school records and found 121 children with significant hearing loss in the speech range (either unilaterally or bilaterally), none of whom had ever been referred for educational followup. Only 11 of these children were rated as participating members of their classes; 28 had failed one or more grades; and the remainder were rated by teacher questionnaire as underachievers, withdrawn, having social problems, etc.; only 9 wore hearing aids; IQs of some children were reported to be well above average, yet no child was above average in any subject; only 15 were in high school (Blessing, 1968).
3. Some effects of hearing loss on educational achievement were revealed by Quigley (1968) in a research study of 150 elementary school children whose hearing loss had been identified through screening. Results showed many children to be retarded in language beginning at the level of hearing screening and increasing with the severity of loss. Also, for every subtest in every hearing level category actual performance was lower than expected performance. Statistics on grades retarded in language are quoted in Table 1 (Quigley, 1968, pp. 12-13).
4. Educational referral of preschool children with hearing loss was noted in a Maternal, Infant, and Preschool Child Health Survey. A total of 17,115 children were screened for hearing impairment; the "number of defects" reported was 943 (Gelperin, 1969). Of this group in Cook County, Illinois, only one of the 943 identified suspects was known to have been referred for special education followup.
5. Hearing loss among children with other handicaps was studied in 406 children already enrolled in special classes (Pahle, 1968). The following percentages of undetected hearing impairment were found: retarded children—31%; learning disabilities—20%; emotionally disturbed—32%; and unclassified—25%.

## ILLINOIS SOLUTIONS

Three steps have now been taken in the State of Illinois to help coordinate the educational services to hearing impaired children with the identification program:

1. The Child Hearing Test Act (Senate Bill 324, 1969) mandates hearing testing services beginning as early as possible but no later than a child's first enrollment in any educational setting; administered by the State Department of Public Health in cooperation with the State Department of Education; and although not mandated, vision screening services are also being initiated at the same time.

**TABLE 1**

**Relationship of Degree of Hearing Loss to Grades Retarded in Language**

| Better ear average in speech range 500-1000-2000 | | Grades retarded in language |
|---|---|---|
| (Minimal) | 15 - 26 dB | -1.16 |
| (Slight) | 27 - 40 dB | -1.95 |
| (Mild) | 41 - 55 dB | -2.93 |
| (Moderate or Marked) | 56 - 70 dB | -3.52 |

2. The rules and regulations governing the implementation of the Child Hearing Act (1972) require that all children identified will be simultaneously referred to the doctor for medical clearance or treatment and to the director of special education for educational clearance or further educational service. The rules also specify standards, procedures, and the training of personnel including nurses and technicians engaged in hearing testing services.
3. The rules and regulations governing special education, the Illinois School Code, include a policy that hearing and vision testing services be administered prior to placement of any child in any special education program (1973). Provisions also mandate educational programs for children age 3 to 21 years. Permissive parent-infant programs (birth to age 3 years) are encouraged through additional financing.

Thus the state is now committed to an organized plan of casefinding and service; to make sure that the child's two most basic avenues of learning, *hearing* and *vision*, are in the best possible condition for learning and that necessary services are provided at the earliest point possible. An accountability procedure is now being pursued.

**PROGRESS OF STATE PROVISIONS IN THE UNITED STATES**

Provisions for identification and referral services in states across the nation show both progress and problems. The series of annual reports of the Demographic Studies on the Hearing Impaired provides a wealth of information on individual states pertinent to state planning. The following information is from the Annual Survey of State Identification Audiometry Programs and Special Educational Services (Gentile & Reis, 1972):

1. Twenty-four states report some form of statutory provisions for hearing testing services for school children. This is an increase of 9 states in the last 5 years.
2. Twenty-six states have no statutory provisions for hearing testing services.
3. Administration of hearing testing services show State Departments of Public Health and State Departments of Education as coordinators in 20 states, the Department of Public Instruction as coordinator in 8 states; and Department of Public Health in 11 states.
4. Quality of services was reported to show a lack of statewide standards for the regularity or method of testing in 33% of the states; and the type of training and personnel involved varied considerably within states.

Fourteen states now have both mandatory hearing testing services and mandatory special education for children—as early as age 3. Ten states have neither mandatory testing nor special education. Whether with or without legislative provisions, there are wide gaps in coordination of services which reveal points of breakdown in hearing testing services and referral for medical, audiological, and educational followup.

Table 2 is a compilation of information from the Special Report of a National Survey of State Audiometry Programs and Special Educational Programs, Office of Demographic Studies, Gallaudet College for the Deaf, Washington, DC (Gentile & Reis, 1972). For the purposes of this paper, the states selected were those reporting sequential information in regard to identification screening and medical, audiological, and educational followup. These statistics provide a glimpse into the magnitude of services needed; and the possible discrepancies between anticipated numbers of children needing medical, audiological, and educational services and the numbers reported to be receiving them. Many states reported less accountability.

**THE NATIONWIDE EDUCATIONAL PROBLEM**

The Directory of the American Annals of the Deaf records 49,696 children enrolled in educational programs in 1973 which is approximately 80% of the total. This seems a large number; however, it is a cumulative figure encompassing an age span of 15 years, or in many states, an even wider span (ages 3 to 21). Annual increases in enrollment of deaf and hard of hearing children in schools and classes in the United States, reported in the Directory of Services for the Deaf, are as follows:

1968–1969 ..... 44,020
1970–1971 .... 45,125 (increase of 1,105)
1971–1972 .... 46,075 (increase of 950)
1972–1973 .... 49,696 (increase of 3,621)
1973–1974 .... 51,837 (increase of 2,141)

In addition, itinerant special education programs were estimated to be serving 12,000 children (Gentile & Reis, 1969–70), and this figure has probably increased. There is no indication of the number of years children remain under this itinerant service. However, all of these increases, divided among 50 states, show a wide discrepancy on a national basis between predicted numbers of children needing service and the actual services being provided for hearing impaired children.

**COORDINATION OF SERVICES**

Coordination of services to children is basic to successful statewide programs of identification and followup. The recent document of Health, Education, and Welfare, *Improving Services to Handicapped Children with Emphasis on Hearing and Vision* (Kakalik, 1974) details the full range of identification and followup systems including services rendered, needs, coordination, responsibilities, costs, and federal programs. The publication's major emphasis is on hearing and vision as basic services to all children. Three of its important concepts are the following:

- Directive centers for hearing and vision in some form have been advocated in the HEW study (Kakalik, 1974) as a means of establishing a "one stop" coordinated service unit. Fragmented or splintered services are inefficient and costly. This report recommends a network of 150 to 200 Regional Directive Centers specifically for hearing and vision. Services derived from savings in lost time, inadequate and duplicated services, and transfer of records would equalize the costs of such a network and justify the service. If fully coordinated with state action, it should expedite professional service to children where resources are limited.
- Responsibility for the program of identification, either by state law or

**TABLE 2**

**Compilation of Services Reported from Selected States from Various Sections of the Annual Survey, Demographic Studies, 1972**
**State Identification Audiometry and Special Education**

| State | Have law for hrng. test | Children screened | Children failed | Medical Referral | Medical Seen | Comments — on audiological or educational needs | Educational Program Total enrollment (15 yr. span) | Educational Program Estimated annual[1] average of new cases | Int nerant or speech correction |
|---|---|---|---|---|---|---|---|---|---|
| California | Yes | 1,297,703 | 49,891 | 32,314 | 18,556 | | 5,289 | 352 | – |
| Hawaii | No | 31,000 | 1,185 | | | 369 Educationally significant losses | 201 | 13 | 90 |
| Iowa | No | 294,190 | | | 8,705 | 482 recid amplification<br>214 enrolled in educ/hor | 612 | 40 | – |
| Michigan | Yes | 592,928<br>Preschool 43,312 | 30,031<br>1,731 | 19,677<br>1,779 | | | 2,640 | 167 | – |
| Pennsylvania | Yes | 1,482,391 | 82,732 | 35,832 | 24,913 | 2,366 wearing hearing aids | 2,565 | 171 | 1,397 |
| S. Carolina | No | 175,610<br>(El. 133,979)<br>(HS. 41,631) | | 2,495 | 833<br>(475 treated) | 87–hearing aids<br>71–school for handic.<br>1,178–preferential seating | 346 | 22 | 44 speech clinician only as far as spch. is concerned |
| Virginia | Yes | 112,791 | | 3,558 | | 6,820 significant loss | 1,521 | 101 | – |
| Wisconsin | No | 230,000 | | 5,000 | | 4,600 need special education or periodic consultive service | 948 | 63 | – |
| Texas | No | 734,463 | | 18,969 | 7,624 | | 2,477 | 165 | – |
| Oregon | No | 198,000 | | 5,000 | 4,500 | 8,000 referred for audiol. examination<br>1,450 referred by teacher & nurse<br>800 audiological exams<br>400 referred for medical<br>700 audiological recheck<br>100 for medical ? | 984 | 64 | 294 |

[1] This estimated annual average of new children enrolled in educational programs was obtained by dividing the total cumulative enrollment by 15, a minimum number of years for most children (3-18).

state policy, is imperative to an organized plan of service delivery. This responsibility varies from state to state. The majority seem to have placed the authority with the state's health agency, since the doctor is usually the parents' first contact and since the need for medical care for all hearing impaired children is so great. Most important, however, is the necessity for a firmly welded liaison between health and education, with decision making authority well defined.

- Medical followup for a screening examination and for referral for treatment is the first requisite to an identification program. It can be accomplished through intervention on the part of parents or through the development of coordinated services by professionals. Medical service organizations and agencies such as Maternal and Child Health, and Medicaid, have provisions specific to case finding and service with funds for this purpose. Closely associated with the handicapped is the Division of Services for Crippled Children, partially supported by federal funds and primarily a medically based state service with marked funds for needy families. Individual states may determine the handicapped children to be served and services to be offered including health examinations, medical and surgical care, otologic-audiologic clinics, purchase of hearing aids and other such services. This resource agency is important to a state plan of comprehensive services to children.

## NUMBERS AND NEEDS OF HEARING IMPAIRED CHILDREN

The fragmented services in most states by public, private, and volunteer agencies, as well as many other contributing factors, has made the collection of data on numbers and needs of hearing impaired children extremely difficult. This was pointed out by Eagles and Doerfler in the Conference Proceedings on the Collection of Statistics on Severe Hearing Impairments and Deafness in the United States in 1964. However, there are several recent statistical reports and studies using the same baseline groupings (see Table 3) thus providing meaningful information on predicted numbers and needs of hearing impaired children of significance to school administrators and other professional personnel.

The statistics on numbers and needs of hearing impaired children (Tables 3 and 4) may be controversial, yet they evolved from studies by highly competent professional personnel and are quoted by leading authorities. Of the 2.5 million children with hearing loss outside the normal range, a million children have been given clearance by some system that no significant problems exist. Another million children with hearing loss in the speech range would be expected to need medical, audiological, and educational screening for decisions about further followup. Hearing aids may be needed by many children in groups C or above (Davis & Silverman, 1970). An unknown number may need clearance, and/or educational evaluation, counseling, supportive service, or program placement. Channels for this team approach, or tracer procedures to such

**TABLE 3**

**Projected Numbers and Educational Needs of Children in the United States, Ages 3-18, with Hearing Loss in the Speech Range**

| | Degree of Hearing Loss (Davis & Silverman) | | | | | | |
|---|---|---|---|---|---|---|---|
| Subject and authors of individual study | Minimal less than 25 dB | Slight 26 to 40 dB | Mild 41 to 55 dB | Marked 56 to 70 dB | Severe 71 to 90 dB | Extreme (profound) over 90 dB | 2,500,000 |
| Incidence (Eagles & Doerfler) | 98.3% | 0.9% | 0.5% | 0.2% | .05% | | 100% |
| | | | | 1.7% | Study did not include children in state schools | | |
| Estimated number of hard of hearing children (Berg) | Unknown | 636,975 | 357,875 | 141,550 | 14,155 | Not given | 1,146,555 |
| Hearing for the spoken word (Davis & Silverman) | Termed "not significant" | Trouble with Conversational Speech | May hear only 3-5 ft. from speaker, face to face | Hears only very loud speech at close range | Hears only extremely loud voice at 1 ft. from ear | No response to voice | |
| Estimated grade levels retarded in language (Quigley & Thomure) | -1.16 | -1.95 | -2.93 | -3.53 | Reading score: 88% below 4.9 at age 16 years (Wrightstone) | | |

Note: Estimated number of children with hearing loss outside the range of normal (Davis & Silverman, 1970) = 2,500,000;
Estimated number of children, ages 3-18, with hearing loss in the speech range exclusive of minimal and profound (Berg & Fletcher, 1970) = 1,146,555;
Reported number of children **enrolled** in educational programs in 1970 (Vernon, 1974, p. 159) = 51,837;
Reported number of children in groups E & F in 1970-71 (Reis, Series D, no. 10, p. 4) = 51%;
Reported number of children in groups B, C & D in 1970-71 (Reis, Series D, no. 10, p. 4) = 49%;
Estimated number of children receiving itinerant service in 1969-70 (Gentile & Reis, Series D, no. 5 p. 2) = 12,000.

sequential management are inadequate at present.

Absent from the team involved in educational screening and followup has been the educator of the hearing impaired (National Research Conference on Day Programs for the Hearing Impaired, 1967; Hiett & Stewart, 1968; Blessing, 1968). It has been emphasized that the teacher-educator of the hearing impaired must begin to assume greater responsibility for participating in decision making about educational needs of hearing impaired children by assuring that no educational problems exist and by participating in the development and implementation of a plan of educational followup. The educational screening need not be elaborate. Teacher questionnaires regarding the child's academic and social achievement usually reveal substantial evidence for educational clearance or referral for further educational service. The preschool screening process must be developmental in nature, noting language development and response to verbal instruction.

According to a report published in *Insight*, one of the questions asked most frequently by those who deal with the education of handicapped children and those who make public policy decisions regarding such programs deals with estimates of the incidence of handicapping conditions which occur in the school population. Although such figures are admittedly hard to obtain, the Bureau for the Education of Handicapped Children uses the following statistics (Ballard, 1973) for the school population age 5–19:

| *Category* | *Percentage* |
|---|---|
| Speech Impaired | 3.5 |
| Emotionally Disturbed | 2.0 |
| Mentally Retarded | 2.3 |
| Learning Disabled | 1.0 |
| Hard of Hearing | .5 |
| Deaf | .075 |
| Crippled and Other Health Impaired | .5 |
| Visually Handicapped | .1 |
| Multihandicapped | .06 |
| TOTAL | 10.035 |

In view of the low percentage of children estimated as having hearing

**TABLE 4**

**Estimated Number of Hard of Hearing Individuals Less than 18 Years of Age in Each of the 50 States of the United States Based on the 1967 Preliminary Census Figure**

| State | Difficulty with: Faint speech 26–40 dB | Normal speech 41–55 dB | Loud speech 56–70 dB | Severely hard of hearing 71–90 dB | Total |
|---|---|---|---|---|---|
| Alabama | 11,907 | 6,615 | 2,646 | 265 | 21,433 |
| Alaska | 1,062 | 590 | 236 | 24 | 1,912 |
| Arizona | 5,814 | 3,230 | 1,292 | 129 | 10,465 |
| Arkansas | 6,390 | 3,550 | 1,420 | 142 | 11,502 |
| California | 60,921 | 33,845 | 13,538 | 1,354 | 109,658 |
| Colorado | 6,543 | 3,635 | 1,454 | 145 | 11,777 |
| Connecticut | 9,081 | 5,045 | 2,018 | 202 | 16,346 |
| Delaware | 1,782 | 990 | 396 | 40 | 3,208 |
| Florida | 18,459 | 10,255 | 4,102 | 410 | 33,226 |
| Georgia | 15,318 | 8,510 | 3,404 | 340 | 27,572 |
| Hawaii | 2,592 | 1,440 | 576 | 58 | 4,666 |
| Idaho | 2,394 | 1,330 | 532 | 53 | 4,309 |
| Illinois | 34,523 | 19,180 | 7,672 | 767 | 62,143 |
| Indiana | 16,497 | 9,165 | 3,666 | 367 | 29,695 |
| Iowa | 8,802 | 4,890 | 1,956 | 196 | 15,844 |
| Kansas | 7,227 | 4,015 | 1,606 | 161 | 13,009 |
| Kentucky | 10,361 | 5,760 | 2,304 | 230 | 18,662 |
| Louisiana | 13,140 | 7,300 | 2,920 | 292 | 23,652 |
| Maine | 3,150 | 1,750 | 700 | 70 | 5,670 |
| Maryland | 12,204 | 6,780 | 2,712 | 271 | 21,967 |
| Massachusettes | 16,677 | 9,265 | 3,706 | 371 | 30,019 |
| Michigan | 29,070 | 16,150 | 6,460 | 646 | 52,326 |
| Minnesota | 12,141 | 6,745 | 2,698 | 270 | 21,854 |
| Mississippi | 8,406 | 4,670 | 1,868 | 187 | 15,131 |
| Missouri | 14,166 | 7,870 | 3,148 | 315 | 25,499 |
| Montana | 2,394 | 1,330 | 532 | 53 | 4,309 |
| Nebraska | 4,653 | 2,585 | 1,034 | 103 | 8,375 |
| Nevada | 1,521 | 845 | 338 | 34 | 2,738 |
| New Hampshire | 2,169 | 1,205 | 482 | 48 | 3,904 |
| New Jersey | 21,321 | 11,845 | 4,738 | 473 | 37,951 |
| New Mexico | 3,915 | 2,175 | 870 | 87 | 7,047 |
| New York | 54,333 | 30,185 | 12,074 | 1,207 | 97,799 |
| North Carolina | 16,578 | 9,210 | 3,684 | 368 | 29,840 |
| North Dakota | 2,205 | 1,225 | 490 | 49 | 3,969 |
| Ohio | 34,182 | 18,990 | 7,596 | 760 | 61,528 |
| Oklahoma | 7,578 | 4,210 | 1,684 | 168 | 13,640 |
| Oregon | 6,156 | 3,420 | 1,368 | 137 | 11,081 |
| Pennsylvania | 35,037 | 19,465 | 7,786 | 779 | 63,067 |
| Rhode Island | 2,700 | 1,500 | 600 | 60 | 4,860 |
| South Carolina | 9,108 | 5,060 | 2,024 | 202 | 16,394 |
| South Dakota | 2,313 | 1,285 | 514 | 51 | 4,163 |
| Tennessee | 12,366 | 6,870 | 2,748 | 275 | 22,259 |
| Texas | 36,909 | 20,505 | 8,202 | 820 | 66,436 |
| Utah | 3,879 | 2,155 | 862 | 86 | 6,982 |
| Vermont | 1,359 | 755 | 302 | 30 | 2,446 |
| Virginia | 14,715 | 8,175 | 3,270 | 327 | 26,487 |
| Washington | 9,774 | 5,430 | 2,172 | 217 | 17,593 |

(Cont. on next page)

TABLE 4 (Cont.)

| | Difficulty with | | | | |
|---|---|---|---|---|---|
| | Faint speech 26-40 dB | Normal speech 41-55 dB | Loud speech 56-70 dB | Severely hard of hearing 71-90 dB | Total |
| West Virginia | 5,589 | 3,105 | 1,242 | 124 | 10,060 |
| Wisconsin | 13,977 | 7,765 | 3,106 | 311 | 25,159 |
| Wyoming | 1,071 | 595 | 238 | 24 | 1,928 |
| Washington, D.C. | 2,529 | 1,405 | 562 | 56 | 4,552 |
| United States | 636,975 | 353,875 | 141,550 | 14,155 | 1,146,555 |

NOTE: This table appeared in *The hard of hearing child*, Berg & Fletcher, 1970, pp. 9-10.

impairment (.5% and .075%) it seems possible that many children within the other categories may have some degree of hearing loss which is either untreated or even unsuspected.

## PRESCHOOL IDENTIFICATION PROGRAMS AND PREVENTIVE CARE

Preschool identification programs hold the greatest promise for preventive care of hearing impaired children but also the greatest hazards for coordination of followup services.

The annual report of the National Advisory Committee on the Education of the Deaf to the Secretary of Health, Education, and Welfare (*Basic Rights of the Hearing Impaired*, 1973) lists early education of infants 0-3 and their families as one of its recommendations, as did all previous conference reports on the education of the hearing impaired.

State and federal governmental agencies are increasingly emphasizing the implementation of an organized system of early case finding and followup leading to preventive care of very young children. A sense of urgency prevails. This is evidenced by the National Conference on Newborn Hearing Screening conducted in San Francisco, February 1971, cosponsored by the California State Department of Public Health, Bureau of Maternal and Child Health; and the Maternal and Child Health Services of the Mental Health Administration, Department of Health, Education, and Welfare. This conference was conducted in cooperation with the Joint Committee on Newborn Screening representing the American Academy of Pediatrics, the American Academy of Ophthalmology and Otolaryngology, and the American Speech and Hearing Association.

The conference summarized its major issues and objectives as follows:

1. To compile, assess, summarize, and report information related to neonatal hearing and its relationship to other aspects of growth and development.
2. To assess the desirability, practicability, and significance of a variety of hearing testing procedures for the newborn's hearing.
3. To develop guidelines related to testing the newborn's hearing.
4. To recommend studies which should be conducted on the newborn's responses to acoustic stimuli in order to develop increasingly effective means for early identification of hearing impairment.

The Conference on Newborn Screening reported that of the 3.5 million babies born annually, 2,000 to 3,000 are born deaf. Various plans for the identification of the congenitally handicapped infant were reviewed in the report, including the establishment of high risk registers. Evidence showed that 70 to 90% of all children eventually known to be hearing impaired could be identified through a register of high risk mothers. Such a system could also provide an awareness of the possibility of any other handicap (Downs, 1971).

Infant identification is of increasing importance because of the advantages of early use of hearing aids and the benefits of parent-infant education programs. In addition, there is substantial evidence (Downs & Hemingway, 1972) that many children at high risk for recessive deafness are born with normal hearing but suffer serious degeneration within the first 2 or 3 years of life. Once identified, all of these young children 0-3 and their parents need the most expert care possible.

Hearing screening programs for preschool age children, if properly conducted, have long been proposed as a most effective means for the identification of children with hearing problems as well as the identification of children with other handicapping conditions (Darley, 1961). The child's abnormal response to the test situation is as significant as his absence of response to sound. Many hospital and university clinics have established specialized services for screening and evaluating young children, and no child is considered too young to be tested (Hardy, 1966). Preschool screening programs are also being conducted as part of the hearing testing program in the public schools in many states. The incidence of hearing impairment among preschool children, including both congenital and acquired conditions, is expected to be the same as for school age children (Davis & Silverman, 1970).

The task of seeking out children with special needs from the nation's preschool age children is difficult, but a decade of groundwork has been established. Stimulated sharply by the Federal Education Act of 1965, by 1970, approximately 80% of those children age five, 25% of those age four, and 10% of those age three were enrolled in kindergarten, nursery school, or child care centers. Within a three year period, 400,000 of the 682,000 increase was attributable to the federally funded Head Start or other programs (McLure, 1970). This means that a large number of young children across the nation are in the centers where they can be easily reached with needed services. In addition, the Bureau of Education for the Handicapped, US Office of Education, the National Institute of Health, and other government agencies have placed high priority on early childhood programs for the handicapped. It now seems possible to initiate a quality program for identification and education through coordination of services and shared costs of state and federal programs already operational—such as programs funded under maternal and child health, public aid, special programs for the disadvantaged, bilingual, and gifted (McConnell, 1971; Jordan, 1973; Kzkalik, 1974).

Accountability programs for children from the point of identification to

## TABLE 5

### School Facilitues for Hearing Impaired Children and Enrollments in the USA 1971-1972 School Year

| Schools and Classes | Program Data: Preschool centers | Program Data: Accred. H.S. | Student Data: Present Enrollment: Total enroll. | Residential | Day | Total multiply handicapped | Deaf blind | Deaf multiply handicapped | Aphasic | Other MH | 1971 H.S. Graduates: Total grad. | College | Training | Work | Unemployed |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 61 Public Residential Schools | 36 | 25 | 18,767 | 15,206 | 3,565 | 2,190 | 30 | 632 | 177 | 1,351 | 922 | 401 | 137 | 270 | 99 |
| 12 Private Residential Schools | 12 | 2 | 1,847 | 1,141 | 706 | 50 | 1 | 6 | 15 | 28 | 69 | 21 | 9 | 35 | 4 |
| 55 Public Day Schools | 47 | 5 | 5,784 | – | 5,784 | 964 | 22 | 363 | 177 | 402 | 65 | 27 | 9 | 24 | 5 |
| 31 Private Day Schools | 30 | – | 1,174 | – | 1,174 | 190 | 16 | 48 | 80 | 46 | – | – | – | – | – |
| 413 Public Day Classes | 255 | 62 | 16,235 | – | 16,235 | 2,105 | 114 | 564 | 544 | 883 | 379 | 133 | 97 | 133 | 18 |
| 50 Private Day Classes | 44 | – | 1,026 | – | 1,026 | 119 | 6 | 39 | 21 | 53 | 25 | 21 | 1 | 3 | – |
| 52 Multi-Handicapped Classes | 26 | – | 1,242 | 757 | 485 | 1,195 | 313 | 592 | 46 | 244 | 4 | – | 1 | – | – |
| TOTALS (674 Schools & Classes) | 450 | 94 | 46,075 | 17,104 | 28,975 | 6,813 | 502 | 2,244 | 1,060 | 3,007 | 1,464 | 603 | 254 | 468 | 126 |

Note. This table appeared in the *Directory of Programs and Services*, American Annals of the Deaf, April 1972, p. 42.

needed educational services should soon be available. Fourteen states are known to have both mandatory hearing testing services for case finding and mandatory special education—some beginning at age 3 and one (Michigan) beginning at birth. Federally funded preschool models are now emerging in nearly every state, and have the potential for excellence in early identification of preschoolers, followup evaluative service, and parent-child instructional programs. Examples are the PEECH project in Champaign, Illinois, BEH OUTREACH, Bill Wilkerson Hearing and Speech Center, Nashville, Tennessee; Chapel Hill OCD-BEH Project, Chapel Hill, North Carolina; and the federally funded Preschool Project for the Hearing Impaired, Minnesota Office of Education.

The federal thrust to seek out young children with special needs and provide health and educational services to them is a challenge to all professional disciplines. Persons concerned with the hearing impaired child have the responsibility along with other professional personnel to participate fully in these state activities; to assess the progress and problems encountered by parents and children at each stage of decision making to make certain that appropriate educational options are available and that there are firm procedures for accountability of children along the route from case finding to quality services. Perhaps at no previous time has the urgency for a unified approach to child health and child education been so forceful—nor the opportunity for achieving it so great.

## Problem III. Children's Educational Evaluation Services

It seems evident that more than a million children with hearing losses ranging from mild to profound may need initial evaluations and periodic reevaluations at various levels of their education. How can an evaluation system be initiated, assuming that some of these children may have other handicapping conditions? Because of the complex nature and encompassing effects of auditory impairment, a plea for an interdisciplinary team approach to the evalulation of children has been emphasized by many leaders at national conferences—in particular, the National Research Conference on Day Programs for the Hearing Impaired (1966), and the Conference on the Education of the Deaf, The Charge and the Challenge, in 1970. It was urged that evaluations be conducted (a) in relationship to the specific nature of the handicap, (b) in the presence or absence of other handicaps, (c) in relationship to the child's developmental level in general and most specifically to language comprehension and usage and (d) in relationship to his interaction with his environment, his family and community (Hardy, 1967). Of particular concern is the very young child and the increasing number of children with multiple handicaps (Vernon, 1967 & Rainer, 1967).

### EVALUATION PROBLEMS

It is a strange anomaly of our school systems that children with hearing impairment, the most difficult of all educational handicaps, run the greatest risk of being evaluated by inexperienced personnel. Many doctors and other diagnostic personnel have never seen a deaf child and few have an understanding of the potential educational danger of almost any degree of hearing loss. At the present time, thorough evaluation services by skilled personnel are limited primarily to children in a few large city systems, or to the evaluation of children enrolled at state schools for the deaf. For the majority of hearing impaired children, however, interdisciplinary evaluation services by experienced personnel are fragmented, haphazard, remote from the school setting, or nonexistent.

Parents seem relatively helpless as they search, often unassisted, for resources to help their children. Compounding the problem is the extreme shortage of experienced personnel with knowledge of school or state resources, the numerous pseudoprofessionals, and the constant danger of minimizing the problem or channeling the child into some other setting.

The long process of obtaining the various evaluations, the conflicting reports and recommendations, the time lost before enrollment, and the high cost to parents for such services, have lead some special educators to combine their resources on a regional basis as a means of counteracting these inadequacies.

### EVALUATION MODELS

The current trend in comprehensive evaluations is an educational evaluation process based on the child's function. Since function is subject to change with education, these evaluations must be ongoing. Several models for such service to handicapped children are already in existence, each offering a broad spectrum of comprehensive evaluation services, clinical teaching units, and educational programing. Examples include the St. Louis County Program, St. Louis, Missouri; Oakland County, Pontiac, Michigan; DeKalb County, Atlanta, Georgia; The Boward District Program, Ft. Lauderdale, Florida, and the Taft School, Santa Anna, California.

Illinois is developing 13 multicounty regional evaluation centers (through Title VI of ESEA and state funds), for children severely handicapped by hearing impairment, vision, orthopedic, or multiple problems.

Other programs in sparsely populated states may orginate from state schools for the deaf as in New Mexico and Wyoming and attempt to serve all hearing handicapped children known to need such evaluation and services.

The Regional Evaluation Services in public schools may consist of a coordinated contractual program of medical, audiological, and educational resources already located in the area, or entirely new services and facilities within the school setting. In either case, the advantage is that they directly link the evaluation service with the child's educational program, they bring the evaluators into contact with

the school setting, they provide a means for interaction among the staff engaged in the evaluation process, and hopefully, result in a team approach to recommendations (Deno, 1972; Hiett & Stewart, 1968). Also important is the opportunity for the child's parents and teacher to participate in this coordinated evaluation process. The development of such extensive regional services demands new administrative and financial provisions often requiring legislation (see section V).

Cooperative programs between state schools for the deaf and public schools have many advantages. Interagency evaluation institutes are being conducted in some states on an annual basis, bringing together specialists from various disciplines, from in and out of the state, such as the Annual Institute for Parents of Young Deaf Children at the Illinois and Tennessee Schools for the Deaf. Utilization of state schools for the deaf in the summer permits the development of short term residential program's with clinical observation and instruction as well as inservice training for staff. Most valuable are the programs for very young children and their parents, teenage evaluations and aptitude sessions for career planning, and indepth evaluations and programing for severely multiply handicapped children. Comprehensive state and regional planning stimulates the development of these unusual and creative services which are not possible to implement otherwise.

**PERSONNEL SHORTAGES**

There are acute shortages of personnel with needed competencies and inadequate distribution of services to meet the needs of hearing impaired children. The basic team of professionals and services needed include those by the audiologist, psychologist, social worker, and educator, in conjunction with support staff (Hiett & Stewart, 1968).

**AUDIOLOGICAL SERVICES**

The known evaluation of hearing impaired children in the United States reported in 1971 was 31,000 children (Gentile & Reis, 1971). Evaluations were conducted primarily on children already enrolled in educational settings or those for whom enrollment was anticipated. About 13,000 were conducted at hospital and university speech and hearing clinics; about 10,000 at state schools for the deaf; and about 7,000 in other settings (Gentile & Reis, 1971). Information on children not enrolled in educational programs is not available at this time (Gentile & Reis, 1971).

A large number of children with hearing loss in the speech range would seem to need evaluation as potential hearing aid users (Davis & Silverman, 1970) (see Table 3). There are approximately 100 to 200 audiologists and these persons are available in only 6 or 7 states. For the majority of hearing impaired children, audiological evaluation services are completely separated from the child's educational program, whether the child is already enrolled in a special education program or is expected to survive without assistance in a regular classroom program.

Another serious gap is the need for continuous evaluation of the maintenance and effectiveness of hearing aids worn by children, and for counseling in their use. Studies have revealed that the hearing aids of many school children are in need of adjustment, repair or complete overhaul (Gaeth, 1966). The average cost per instrument is $300 to $400, yet over 55% of the more than 4 million children and adults wearing hearing aids are reported to be from families of less than $ 4,000 income (Sensory Training Aids for the Hearing Impaired, 1971). Parents consistently report high costs for repairs, and some parents unwisely purchase a hearing aid for their child without prior professional guidance from a doctor or an audiologist. States are beginning to enact protective laws to prevent this, one of the most recent of which is the Minnesota Hearing Aid Law 1973 Chapter 383 which requires a professional prescription by a doctor or audiologist for children under 18 and adults over 60 prior to the purchase of a hearing aid.

There is also the problem of assessing the auditory environment of schools and classrooms, group amplification equipment, and noise level of the environment (Matkin & Olson, 1970; Jones, 1973). An unpublished study by Matkin, Crum, and Wooton reported that only 1 classroom out of 11 evaluated met minimum standards of this kind. The National Conference on Sensory Training Aids for the Hearing Impaired stated that many classrooms provide such poor acoustical environment that a child, capable of functioning within 60% efficiency under good conditions, may have his efficiency reduced to zero (Levitt & Nye, 1971). With such conditions existing in our schools, children seem far removed from the modern technology described in the conference report.

Psychological and social work services by personnel with special training or experience, who understand the problem of hearing impairment in children, are rare outside of state schools for the deaf. Yet specialists in both of these fields who have had training or experience in working with hearing impaired children continually stress the need for special training for colleagues serving the hearing impaired if valid assessments and recommendations are to be made (Levine, 1960; Myklebust, 1960, & Vernon, 1964). There is a growing concern for the number of hearing impaired children being placed in classes and institutions for the retarded (American Speech and Hearing Association, 1973; Pahle, 1968), for the high incidence of emotionally disturbed children among the hearing impaired (Gentile & Reis, 1973), and for the relative absence of mental health services for mentally ill deaf persons, both children and adults (Rainer, 1967; Schlessinger & Meadows, 1972). Tests given to deaf children by psychologists not experienced with the deaf or hard of hearing are subject to appreciably greater error than is the case when the service is rendered by one familiar with deaf youngsters (Vernon & Brown, 1964). Unfortunately there is said to be greater danger that a low score is wrong than that a high one is inaccurate since there are almost no situations that can result in above capacity performance. Cases are cited of incorrect use of tests resulting in commitment of children to centers for the mentally retarded or mentally ill. Furthermore, the child's mode of communication, whether oral or manual, must be given consideration if adequate services are to be provided. A

specialist must be able to communicate in the language of the deaf child he serves. Implementation of such specialized services to hearing impaired children would necessitate some type of regional services within states.

The educator of the hearing impaired, as the coordinator of the educational laboratory, is responsible both as a contributor to and as a recipient of the evaluation process. Educational evaluations are needed in language output competency, both written and oral, in language input competency in auditory, lipreading, and manual communication; and in speech intelligibility (Kapp, 1971). However, such educational evaluations are seldom conducted and judgments about a child's learning skills, his potential, and instructional needs continue to be made primarily subjectively. This situation is perpetuated by the extreme shortage of competent educational personnel in key positions both at the state and local levels (Bothwell, 1968), and also by the need for improved and standardized measurement tools (Kapp 1971; Frisina, 1967).

An intense effort must be made to provide the educational supervisor with needed competencies and to expand the educational opportunities for such training. It is the responsibility of the educator to assist in making educational recommendations on hearing impaired children. No child should be denied this assistance, yet at the present time few children receive it.

## DIFFERENTIATING THE NEEDS OF THE HEARING HANDICAPPED

For too long, reference has been made to "the deaf" as if they were an homogenous group, and in many programs, placement and instructional methods are the same for all children. There is a critical need for more definitive information about the abilities and potential of each child and for the development of appropriate program options to meet these needs.

In 1971 the National Research Conference on Sensory Training Aids for the Hearing Impaired stated that in schools and programs for the deaf in the United States today, approximately one-third of the children can be considered "totally" deaf; another one-third have residual hearing which could be brought to higher levels of performance, and another one-third are hard of hearing with perhaps some additional handicap (Levitt & Nye, 1970). It was further stated that educators believe that "without early auditory stimulation, many moderately hearing impaired children would, by the age of six or seven, be behaviorally undistinguishable from profoundly deaf children" (Levitt & Nye, 1970, pp. 83-88).

There is a strange similarity between these recent statements and those made by scientist Bezold over half a century ago. When first evaluating the hearing of "deaf mutes" he reported that approximately one-third of the children had "numerous and extensive remnants of hearing over lower parts of the sound scale . . . and that these remnants could be made use of for the purposes of education." He noted that deafened adults with similar degrees of hearing loss functioned very well with amplification. Yet despite their residual hearing these children did not differ materially in function from the more totally deaf children (Bunch, 1943).

While these past and present statements are not equated, they do renew concern for early case finding, evaluations, and educational programing. Recommendations for child placement raise several questions: Was the educational situation recommended because it was appropriate to the child's needs as evaluated by a skilled and experienced interdisciplinary team? Was it recommended because attention to the child's needs was already so delayed that multiple problems interfered with best placement? Or was the recommendation made because there was no appropriate choice, and adequate program options were not available?

New trends in education require consideration of a quality educational program, in a least restrictive environment and appropriate to the child's needs. An absolutely essential provision to adequate programing is a more definitive, comprehensive, and standardized evaluation administered by competent personnel. A national crusade must be waged to alleviate this situation.

## THE NEED FOR A STANDARDIZED, INDIVIDUAL PROFILE

A standardized and individualized learning profile of children, as proposed at the National Research Conference on Day Programs for the Hearing Impaired in 1968, is necessary to emphasize needs of hearing impaired children.

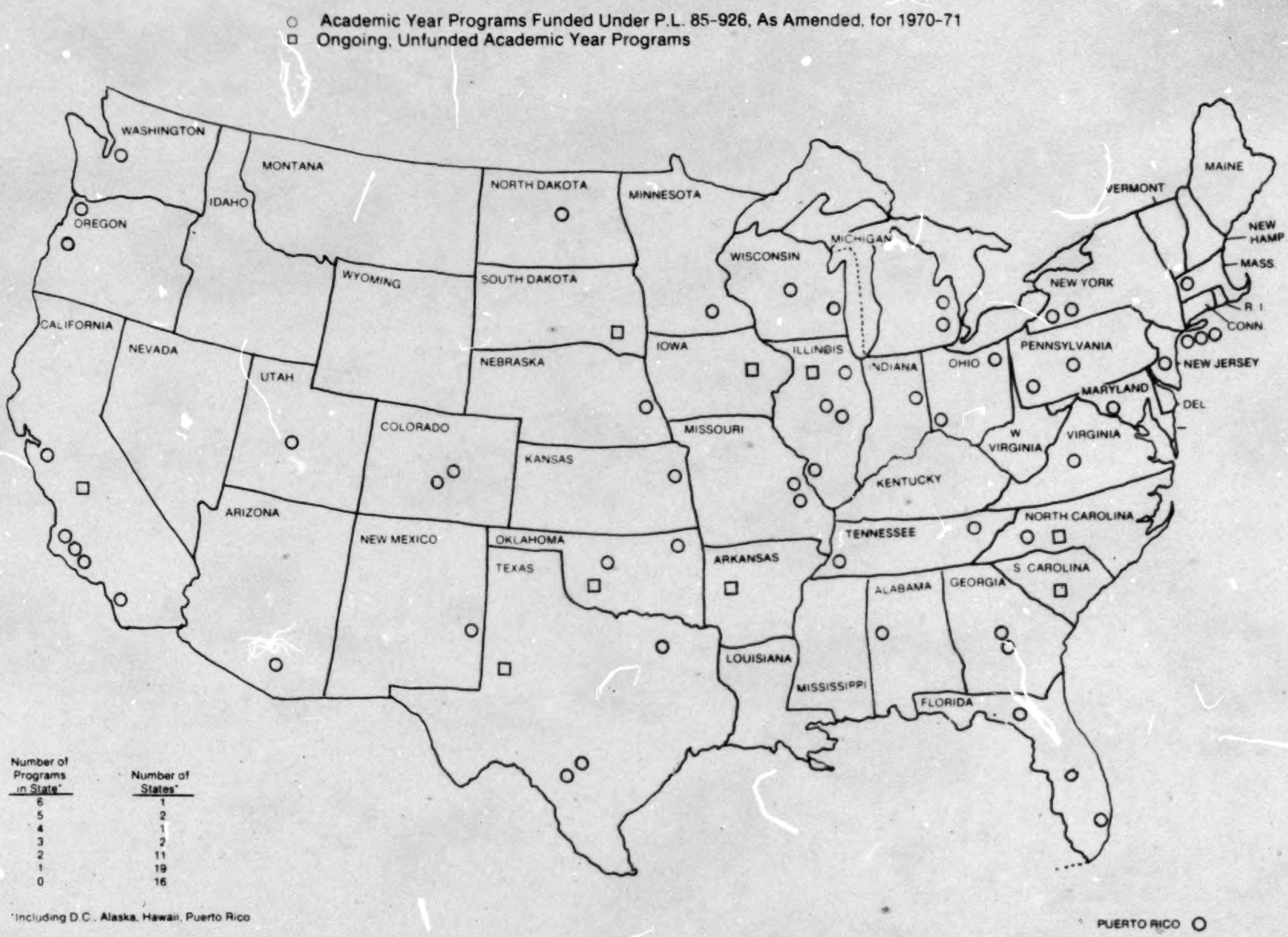
Dimensions of the model proposed at the conference included *functional* information on (a) audiological assessment, (b) central nervous system function, and (c) environmental factors of the child's home—each to be rated on a point scale. Differing from medical evaluations, the focus was to be primarily on the educational alternatives needed by hearing impaired children. What differences in programing might occur if the wide variations in the home lives of children were considered in addition to their individual learning abilities? A comprehensive learning profile of this nature could provide visibility to the needs of hearing impaired children previously obscured and provide a more uniform baseline for instituting diversified programs. It could also provide more objective and uniform data for parents and professionals responsible for the child's education and could focus on the need for creative program options. Perhaps commissioned research is needed in this area.

## REGIONAL RESOURCE CENTERS

In response to the severe need to provide adequate evaluation services to children, the federal government, Bureau for Handicapped Children, authorized and funded under Public Law 91-230 parts C & F effective September 1974, 13 Regional Resource Centers (RRC's) across the United States. The establishment of these centers was a forceful mandate to develop a system of direct services to children for identification, diagnosis, evaluation, and prescription for educational programing for handicapped children ages 3-21, primarily the "inexplicable" child.

The 13 Regional Resource Centers differ according to state population and resources: six of the centers were allocated to individual states of California, Texas, Illinois, Ohio, Pennsylvania and New York. The other seven regions serve states on a multiple basis. See Figure 2.

The role of the Regional Resource Centers is to assist states in the development of evaluative and related ser-




| Number of Programs in State* | Number of States* |
|---|---|
| 6 | 1 |
| 5 | 2 |
| 4 | 1 |
| 3 | 2 |
| 2 | 11 |
| 1 | 19 |
| 0 | 16 |

*Including D.C., Alaska, Hawaii, Puerto Rico

HEW-111 1971 - Number of Teacher Graduates - 746
1972 - Number of Teacher Graduates - 1200

FIGURE 2. Distribution of Training Programs in Education of the Deaf (Schmitt, 1971).

vices; to demonstrate best methodologies and stimulate needed services within local and state governmental agencies. Although centers will differ according to resources needed, the center in Peoria, Illinois provides an example of unique services as follows: a basic staff of social worker, psychologist, special educator, a teacher of the visually handicapped, a teacher of the hearing impaired; contracted specialities such as pediatric, psychiatric, neurological, ophthalmological, cardiac, podiatric, and others; a travelling mini clinic to remote areas; short term residential service, classroom observations of children and a system of accountability for all services to children with handicaps too complex to be met by local educational units. All data are maintained in complete confidentiality in accordance with the Family Educational Rights and Primary Act of 1974. Regional Resource Centers also participate with the Coordinating Office of the RRC's in a plan for conducting regional and national seminars on the evaluation of handicapped children and the needed research. Perhaps specialized training for evaluative staff for deaf children could be initiated through this service.

A firm national framework has been established between services of local districts and state agencies to promote a thrust toward coordinated medical and educational in-depth services to the nation's children. It remains now for professional personnel, parents, and local and state educational agencies to demonstrate the value of this national network to handicapped children through rapid implementation of services and to provide competent staff to participate in the development of local, state, and regional services to children including those with complex, auditory problems.

## The Challenge of Change in the Preparation of Personnel

Colleges and universities engaged in preparing personnel are challenged to meet changing demands of today's society. Added to these demands is their joint responsibility, with other educational systems, for the development of statewide services to handicapped children. The demands on administrators of training programs to provide the highest quality personnel are as great as the demands on school administrators who are expected to provide services to children.

Mandatory special education is in effect in 31 states (1973) and school administrators are under pressure to provide educational programs for children either with or without appropriate or qualified personnel. In the 19 states without mandatory special education, the lack of services to children may be even more critical.

New trends in special education to provide the least restrictive educational alternatives for handicapped children will influence the present training of personnel (Melcher, 1966; Deno, 1972 & 1973; Reynolds, 1972; Marten, 1975). These new trends will also necessitate review of present administrative structures for conducting training programs, and for the coordination of programs for (a) interdepartmental training within the university, (b) between university training centers and local and state educational agencies, and (c) among various state and federal training programs and resources.

At present, there are few training centers for the preparation of teachers of the hearing impaired; their commitment to expanded programs is not visible and their present output of teachers cannot meet the projected needs of hearing impaired children.

The major emphasis on the education of the hearing impaired in the past decade has been on the education of the deaf. Great gains in the preparation of teachers of the deaf, both in quantity and quality of training programs, have been made since the national report on The Education of the Deaf by the Advisory Committee to the Secretary of Health, Education and Welfare (Babbidge, 1965). Priority has been placed on the training of personnel by the federal government through employment of leadership personnel, sponsorship of national conferences and workshops, evaluation of training programs, and financial assistance to universities and students (Forsythe, 1970; Schmitt, 1971). For example:

1. In 1961, when Public Law 87-276 was passed, there were 30 centers in the US training 200 teachers of the deaf. Many of these training programs were conducted within schools for the deaf (Streng, 1960).
2. In 1970, there were 60 university centers, training 745 teachers of the deaf, but the need for teachers had expanded to 1,200.
3. In 1973 to 1975, the increased obligations to mandatory special education and the increased numbers and needs of both deaf and hard of hearing children is again causing concern for the supply of teachers of the hearing impaired.

The present supply of teachers and the limited number of training centers necessitates a reevaluation of priority training needs, consistent with the severity and scope of the problem of hearing impairment.

Coverage by existing training centers for the hearing impaired shows: 16 states have no centers; 19 states have one; 11 states have 2; 2 states have 3; one state has 4; 2 states have 5; and one has 6. (See Figure 2). Some existing centers are expected by their universities to operate as unapproved centers unable to meet the standards for funding by the federal government.

In the 16 states with no approved centers for the preparation of teachers, there could be as many as 98,000 children, aged 3 to 18, with hearing loss of varying degrees of severity in the speech range. A wide range of services by teachers and other personnel might be expected.

It is understandable that an attempt to provide special teachers for all children in need of educational service would be an impossible task—prohibitive in time and money (Gallagher, 1972). However, attention to the problem is necessary, and services

expanded to more adequately meet the needs of hearing impaired children must be provided.

## COORDINATION OF INTERDEPARTMENTAL PROGRAMS WITHIN UNIVERSITIES

One proposal toward a solution might be through joint programing within existing training centers among departments of general education, departments of special education, and departments of speech and hearing.

For a number of years, studies and conference reports have all expressed concern about the competencies of various personnel serving children with impaired hearing. Rodman (1963) suggested a combination "teacher of the deaf-speech clinician" to work with hard of hearing children. Ventry (1965) in the Regional Conferences on Audiology and Education of the Deaf, stressed closer working relationship and combined aspects of training of the audiologist and teacher of the hearing impaired; Fricke and Murray (1969) observed the limited approach to the educational needs of children by the speech clinician; Berg (1970) describes an educational audiologist; Levitt and Nye (1971) urged increased competency of teachers in auditory education; The Council on Education of the Deaf (Hoag, 1972) developed new national standards for teachers of the hearing impaired; Jones (1973) reviewed needed competencies by the audiologist in the public schools; and reports on Head Start and early childhood point up the need for new competencies for teachers of young children (Jordan, 1973). All documents reveal the need for coordinated interdepartmental planning and implementation in the preparation of personnel working with hearing impaired children.

## INTERDEPARTMENTAL RESOURCES

Coordination of interdepartmental resources within colleges and universities seems basic to the preparation of all personnel. Most specifically, for the hearing impaired, this would seem to involve departments of speech and hearing and departments of special education. Many are widely separated in distance, administration, and financing. Individual planning by these training units confuses priorities, necessitates duplication of staff, causes proliferation in kinds of personnel being trained, dilutes quality training, and perpetuates a breakdown between clinical and educational aspects of children's services. Many trainees both in clinical services and in special education are being deprived of fundamental dimensions of learning essential to the competencies of all disciplines dealing with children. Equally deprived of this knowledge is the administrator in both general and special education responsible for the education of children.

Personnel particularly involved in public school services to hearing impaired children for whom clarification of role, competencies, and reevaluation of training is needed include the teacher of the hearing impaired, the learning disabilities specialist, the audiologist, the speech and language specialist, the hearing clinician, and perhaps others.

Perhaps what is needed within universities is a consortium of children's services composed of interdepartmental units engaged in such training, including special education, speech and hearing, psychology, social work, nursing, and others. The policy of the Bureau of Education for the Handicapped, Office of Health, Education and Welfare, for block grants to universities may be helpful in firmly establishing joint planning and participation among related departments. The Board of Higher Education within states and the State Department of Education also assume leading roles in the study and implementation of a plan leading to changes for improved interdisciplinary and interdepartmental coordination of departments engaged in various types of services to children.

## TRAINING CENTERS AND SCHOOL SERVICES RESOURCES

Coordination of resources between the university training centers and school services to children in the community area provides a new and expanding dimension to training programs. Such services now seem to be replacing the traditional laboratory school within universities.

Good facilities for observation, practicum, student teaching or internships continue to be a problem. However, with rapid changes occurring in school programs, both day and residential, public and private, through mandatory legislation and the stimulation from state and federal funds, the public school teaching laboratory has become greatly improved. It can provide a means of valuable ongoing contact between children and teachers, even from the trainee's first year of training and sometimes continues through a post graduate internship. In such programs, training is child centered, learning situations are real, and parent education is a natural part of the program. Equally important is the opportunity for school and university to engage in joint demonstration projects and educational research (Bakalis, 1971). With the commitment of universities and colleges to research and with the critical need for research in educational programs for the hearing impaired, such joint programing could begin to raise the level of the training of personnel and also the education of children.

The role of the university clinics and laboratory school programs in serving hearing impaired and other children is also changing (Hiett & Stewart, 1968). The principal reasons universities have maintained such costly services are to provide (a) research opportunities for faculty and students, (b) clinical practicum experiences for faculty and students, and (c) services to hearing impaired and other children. In most university programs, the aspect of service was a by-product of research, training, and university budgetary priorities. Seldom, if ever, was the responsibility of service to children a major priority.

Joint planning between schools and universities is increasingly important since it holds great potential for mutually beneficial developments. One Illinois university reports that its laboratory facilities are now a coordinated part of the large regional public school program in which the university is located. Joint contracting, made possible through Illinois House Bill 505 (1968), provides special education reimbursements through the public school administrative district for the university laboratory school service, thus releasing more funds for improving the training of personnel. Improved

programing for both the children and for the teachers in training resulted (Gray, 1968).

**AMONG THE PROGRAMS**

Coordination of training programs on a statewide or interstate basis might improve the quality of training through state and regional consortia. All components of a quality program are difficult to incorporate into the training program of a single university, yet some type of intra or inter state consortia among them might utilize the major strengths and resources of each in a mutually beneficial manner.

Quality training in areas of specialization for teachers, such as infant programs, preschool, elementary, secondary age, the multiply handicapped, and supervision, as proposed in the new national standards of the Council on Education of the Deaf, might be possible under such a consortium plan. Through such a system duplication of services might be prevented, high costs of the program reduced, and quality improved. The training of audiologists and other professional personnel could also benefit from such a system.

States without training programs might coordinate their efforts with existing programs. Mobility of students for such a system is not impossible. An example of such a possibility is the Western Interstate Commission on Higher Education (WICHE), composed of 13 western states, with a consortia among 67 universities. Within the same area, there are 8 programs for teachers of the hearing impaired; and 4 states without programs. WICHE already has a unique and dynamic program of student exchange in operation for other programs. Last year the Exchange Student Program had 1,000 students enrolled—with all 13 states participating (Volgenau, 1973). The potential for quality training for the hearing impaired through such a consortia would be an exciting and innovative venture.

**STANDARDS**

The New National Standards of the Council on Education of the Deaf (CED) for the Certification of Teachers of the Hearing Impaired need review by university training centers and appropriate state educational agencies, for approval or revision, as a means of improving the quality of training and the retraining of personnel.

The National Standards for the Certification of Teachers of the Hearing Impaired were completed after long term study and were formally adopted by the Council on Education of the Deaf in January 1972. These standards are unique in two important ways: First, they are the result of the joint efforts of three professional organizations with formerly diverse, incompatible views—The Alexander Graham Bell Association, the American Instructors of the Deaf, and the Conference of Executives of American Schools for the Deaf. Second, the standards have been broadened from the *previous standard for teachers of* the deaf to include the continuum of the hearing impaired "any deaf or hard of hearing individual who requires specialized education because of a hearing impairment" (Hoag, 1972).

The standards have many strong features: Training has been broadened to prepare teachers of the hearing impaired; the standards are competency based and performance oriented; they have basic and advanced certification components; they provide flexibility for increased emphasis on learning theories, language, auditory and visual learning, media and methods of specialized instruction, as well as prerequisites in general education. A component for advanced training provides for specialization by levels in early childhood, including infant, elementary, secondary, post-secondary, and also multiply handicapped children. No specific mention was made concerning the preparation of teachers who are themselves deaf—and attention should be given to their needs as professional workers.

Implementation of this quality training would require a strong commitment at several levels: Universities need to provide for adequate staff and expansion of present programs; state departments of education need to develop certification standards for the training of personnel and for model training centers; and boards of higher education and state accreditation agencies need to assess the quality of training programs for the preparation of teachers of the hearing impaired within training centers. Implementation of these standards by most states has yet to be accomplished.

Programs differ greatly, at the present time. Some have a two year master's level program; others, four year undergraduate. Questions are continually being raised about the need for a five year program or a fifth year internship with possibly graduate credit, in order to provide the broad competencies needed by teachers working with deaf and hard of hearing children. There must also be decisions made as to the training of the itinerant teacher of the hearing impaired. Is this the same person or a combination teacher of the hearing impaired and speech and language specialist?

**INSERVICE TRAINING**

Inservice training of supervisors, teachers, and auxiliary personnel seems more critical and extensive than the initial training of personnel; yet many universities seem unable to extend their programs to share these responsibilities with public schools. New knowledge about the education of hearing impaired children and youth, including audiological technologies, instructional equipment, media, linguistics, instructional methods such as fingerspelling and standardized signs, parent education, recreational needs, and assessments of children of all ages demand the implementation of inservice training and continuing professional education programs. In addition, joint consideration must be given to the training of paraprofessionals.

Stimulation of inservice training might be initiated through joint planning by CED, universities with training programs, and state departments of education through a national program of summer training for teachers to meet the new standards. Such a plan would provide an opportunity for acceleration of professional advancement of teachers, and upgrading of needed areas of competency. Under such a plan, the new national credential could be granted to all teachers who completed the inservice training within a specified time span.

Because of the large numbers of children who will remain in the regular classroom, some type of inservice program is essential. To meet this need

Pennsylvania developed Computer Assisted Renewal Education (CARE) (Hall & Mitzell, 1973) to help teachers in Pennsylvania meet the 24 hours of post-baccalaureate credit required to advance from preliminary to permanent certificate. This traveling classroom spends enough time in regions for area teachers to complete a course. Over 36 lessons on special education have been prepared and teachers have responded enthusiastically regarding the increased knowledge and assistance it provides applicable to children in their classroom.

Federal projects and national demonstration centers could also enter into a coordinated plan with states in the preparation and training of personnel for leadership roles. An outstanding contribution by the federal government has been the development of demonstration centers for various services to hearing handicapped children and youth. Resources such as the National Technical Institute (NTID); the Model High School and Gallaudet College, Washington, DC; the three Technical Vocational Institutes (TVI) in Seattle, New Orleans, and St. Paul; the Mental Health Centers, such as Langley Porter in California and New York University; and preschool programs such as those described in section 2, could now make tremendous contributions to the training of specialized personnel. Training programs could be instituted at the graduate or postgraduate levels. Parent infant education, preschool, secondary, multiply handicapped, vocational areas, media, social work, psychology, audiology, and speech are all areas which could benefit immeasurably from such professional affiliations. Also of great value would be the 13 new Regional Learning Resource Centers recently established in various parts of the country under provisions of Public Law 91-230 of Title VI for evaluative services to children with extreme handicaps.

### TRAINING TO MEET NEW TRENDS

The training of personnel to meet new trends in special education is a challenge to all educators of handicapped. Issues have been presented by many educational leaders in an attempt to decategorize the handicapped child as much as possible yet provide necessary services by increased emphasis on instructional systems, environmental facilities, and teaching skill (Reynolds, 1971; Gallagher, 1972; & Deno, 1973). These new systems hold promise of improved programing for many children if the preparation of personnel can keep pace with proposed educational changes. There will still need to be "categorized" teachers for children with extreme educational problems such as the deaf and the blind (Reynolds, 1971).

Many educators of deaf and hard of hearing children look upon current trends and policies of mainstreaming and noncategorical preschool programing with great concern in view of the scope and severity of the problem, and the cumulating evidence of lack of understanding of educational needs and severe mismanagement of hearing impaired children of all ages (Turecheck, 1973; Research Conference on Day Programs for the Hearing Impaired, 1968).

The preparation of personnel to serve children with auditory handicaps ranging in severity from mild to profound, in age from birth to 21, and in a wide variety of educational settings will demand intensive evaluation of training programs by all disciplines. As long as serious concerns exist among educational leaders of the hearing impaired, dialogue must continue until the needs of hearing impaired children have been thoroughly explored and all training needs reexamined.

There is every opportunity for national leaders in all fields of specialization to participate in the restructuring of educational concepts and standards for the preparation of personnel. One vehicle for such change already activated is the Professional Standards Project of The Council for Exceptional Children (Stevenson, 1973-74). It now seems timely and urgent for training centers and natural professional organizations involved in services to hearing impaired children to unify their efforts and to develop policies on priority needs of children, to reassess the problems based on current national statistics, and to pursue implementation of a system of training and inservice training of personnel that can meet the needs of hearing impaired children and youth with a new look at the needs of adults. Proposals for action could be developed and promoted by joint participation by the Division of Teacher Preparation and the Division for Children with Communication Disorders within The Council for Exceptional Children.

## The Need for Educational Reform in States (Including Administration and Finance)

An increasing number of state legislatures and federal courts are mandating that special programs be provided for all handicapped children. The intent of this legislation means that all handicapped children in those states are entitled under the law to a free public school education, and parents have successfully tested its strength. For some handicapped children, however, such programs and services are unusually difficult to provide and the hearing impaired child is one of these (Research on Day Programs for the Hearing Impaired, 1971; Recommended Organizational Policies in the Education of the Deaf, 1973). How comprehensively these services are developed and how effectively these needs are met, enabling young people to become self confident and capable adults, would seem to be affected largely by the leadership of professional educators.

### NEED FOR COMPREHENSIVE PROGRAMS

Comprehensive programs and services for hearing impaired children are not bound by any single arrangement. Problem areas in each state may differ—populations and transportation, personnel needs, local and state

resources, individual needs and numbers of children, and school financing—but the one consistent and obvious factor is the need for coordinated, comprehensive programs and services.

There is a strange dichotomy in present services. There are exciting, new, and creative developments in parent-infant home programs, early case finding, medical services, technology in hearing aids and amplification equipment, school architecture, room acoustics, and safety features. There are now national educational demonstration centers at all levels, for children with diverse needs. There are new auditory and visual instructional and technological media, interdisciplinary evaluation centers with ongoing services, skilled teachers, vocational education, creative extracurricular activities for students, and parent education programs. However, for the majority of hearing impaired children, these services are only a mirage.

In many states, despite considerable effort by concerned special educators, there are few comprehensive quality programs and services for hearing impaired children. For the most part, existing classes for deaf children lack continuity and are scattered, ungraded, unsupervised, and poorly equipped; evaluation services are limited. In the majority of states, there are no educational supervisors of the hearing impaired either, at local or state levels, to assist parents and child or administrators with these serious problems (Mulholland & Fellendorf, 1969; Blessing & Bothwell, 1968). Only in a few large city systems, some state schools for the deaf, and possibly one or two programs where statewide planning has taken place, are programs for the hearing impaired adequate, and no state provides what might be termed comprehensive services (Mulholland & Fellendorf, 1969; Kopp, 1971; Harrington, 1973).

Adequate programing in public schools is often hampered by the need for a regional administrative framework and the expense of this program. Yet reports indicate that hearing impairment costs the nation $1.5 billion annually in loss of earning power. This makes it necessary to look at the problem not only as a humanitarian one or as one of legal rights of school children, but as an economic waste of human potential and dollars, which the nation can ill afford.

Financing of school programs within states varies widely. With the exception of Nevada and Alaska, all states have one or more residential schools for deaf children. At one time these schools could serve all known deaf children. Today, they serve about half of the total, with the other half in public school programs and a relatively small number in private facilities. With the increase in identification of hearing impaired children, state schools have expanded their programs to full capacity and have also assisted in evaluations of children where no services existed. In most states, these services are financed at 100% of the costs for all programs, services, staff, facilities, and residential living. For the 50% of children in public schools, financing has not kept pace with their needs, and consequently, the development of quality programs in public schools has been extremely limited.

The problem today is twofold: First, it is necessary to provide equally comprehensive educational programs and services to all deaf children whether they are in special education programs in public schools or in state schools for the deaf, and to provide adequate funding to make such services possible. Second, it is also necessary to look at the total scope and severity of hearing impairment in all children and to initiate task forces to deal with this problem.

## ACCOUNTABILITY OF HEARING IMPAIRED CHILDREN

Tables and data are included on (a) distribution of school enrollments, and (b) information specific to preschool children. Priority points are as follows:

- Day and residential services. Services to children as indicated by enrollment in types of facilities show relatively equal numbers of children in residential facilities (mainly state schools for the deaf) and various types of day facilities, with reported division of 20,807 and 31,030 respectively. Missing are numbers of children in residential institutions for retarded children or in facilities for the emotionally disturbed or mentally ill. Any plan for comprehensive services would necessitate a firm agreement on coordination among all major services within all agencies.
- Enrollment. Increases in total enrollments of known hearing impaired children are small in relation to need. Of the 46,075 children reported in 1971-72, about half—51% (or 23,498)—were said to be "deaf" children with a hearing loss of 85 db ISO or greater in the speech range (Gentile & Reis, 1972). Applying the same percentages to the updated enrollments of 1973-74 (51% of 51,837), it is evident that services are lacking for those with profound hearing losses—based on the prediction of 2,000 to 3,000 annual births of deaf children, assuming the same baseline for deafness is used.

  Hard of hearing children are largely unaccounted for. Those accounted for total fewer than 25,000 using 49% of total enrollments plus some 12,000 enrolled in itinerant services (Reis, 1972). These combined totals are less than the expected numbers of hard of hearing children needing programing. Some children may be enrolled in programs for other types of handicapped children, but it is evident that there is only limited accountability in our school systems for educational services provided to children with hearing handicaps. The difficulties of providing instructional programs and services to the hard of hearing must not be minimized. Research shows that these children have unmet needs, causing educational, environmental, and societal retardation (Berg, 1972; Quigley, 1968; Fricke & Murray, 1969).
- Multiply handicapped. Statistics show a marked increase in numbers of deaf multiply handicapped children enrolled in special programs. The increase in multiply handicapped children places heavy demands on departments of education to identify their needs and develop meaningful programs for parents and children. Public Law 90-247 of Title VI, Part C, of the Elementary and Secondary Education Act, specific to deaf-blind children, has been of great assistance in this respect,

not only in service to deaf-blind children, but also in calling attention to the multiply handicapped child. It should also be noted again that deaf retarded children in institutions are not included in these statistics. The American Speech and Hearing Association, in its 1974 study, *Understanding Their World*, estimated this figure to be as high as 18% of the institutional enrollment.

- Secondary. Statistics reveal serious discrepancies between anticipated needs of high school age youths, i.e., college and noncollege bound. They suggest a heavy dropout rate which should challenge schools to mobilize resources to serve the young adult. Statistics reveal that greatest school attendance occurs at 12 years of age, with a consistent decrease every year thereafter (Reis, 1971). In many states, special education is provided under state law from ages 3 to 21; yet enrollments at the upper levels are negligible.
- Vocational Rehabilitation. Vocational rehabilitation is a major problem and one which needs joint action by service agencies. Vocational rehabilitation conferences have demonstrated the needs of hearing impaired youth across the country, and have been instrumental in the development of regional rehabilitation centers. It appears that over 14,000 youths were rehabilitated to jobs in 1973 according to *Statistical Notes*, of the Rehabilitation Services Administration (1973). With less than 2,000 students leaving special education programs annually, one can assume that for many students special education services were not provided during their school years, and needed services were delayed until their separation from school and eligibility for rehabilitation. Even in states where there are mandatory special education laws covering youth to age 21, the issuance of a certificate for completion of a course of study permits dismissal despite the fact that the youth is not prepared to assume responsibilities. This gap between education and rehabilitation is serious.

The magnitude of the problem is impossible to decipher, but Schein (1974), in the compehensive publication *The Deaf Population in the United States*, estimated the number of 19 year old prevocationally deaf youth alone to be approximately 8,000. The report also noted that young deaf adults aged 16 to 24 have the greatest problem obtaining jobs.

Williams and Vernon (1971), in a study on the rehabilitation of multiply handicapped youth with impaired hearing, reported that 15 to 35% of this group had either been excluded from school admission entirely or had been dropped from school before the age of 16; yet, many were later able to be rehabilitated to jobs. Williams and Vernon further predicted, based on job opportunities, that less than 20% of students gain marketable skills; of the remainder, 70% may be unemployed within the next 10 years; and the other 30% underemployed and frozen in various unskilled and menial jobs (Davis & Silverman, 1971).

Educational and rehabilitation facilities for these young adults are not adequate (Schein, 1974). At present, educators seem satisfied with meeting superficial needs, using the main national centers for college bound students or technical training, but leaving the greater problem of rehabilitation training and retraining almost untouched.

Current opportunities exist for coordination of joint programing and the use of state and federal funding among vocational rehabilitation and education services, state employment agencies, junior colleges, colleges of higher education, and adult education. In view of present economic conditions, some type of permanent task force seems needed among high offices of state governmental agencies and state and federal departments of rehabilitation and labor.

- Enrollments for preschool children. Young children ages 1 to 6 years are receiving services, but these services are fragmented and little current educational information is available. Strong agreement seems to exist on the need for educational programs for infants, preschool children, and their parents. All national conferences recommend the development of such services. In addition, information from some foreign countries with various forms of health plans (particularly Sweden, Denmark, and The Netherlands) attest to the values of coordinated early medical and educational intervention to minimize the handicap of deafness (Kakalik, 1974).

Deaf infants, 2,000 of which are born annually, must also be served. Their educational need surpasses those of almost all other children by their lack of an auditory language learning system. Emphasis on service to this age group (birth to 3 years) and their parents would require the federal government to provide enabling funds specifically directed to this level, with a description from the Bureau of Education for the Handicapped of range of services to be provided.

The report also indicated that the average age for the enrollment of deaf children was age 3 years, and the average age for the enrollment of hard of hearing children was age 5 years. Other significant trends were that 79% of all preschool children were in some type of day program with about 50% of the parents included in an educational or guidance program. There is no doubt that recent expansion has taken place, but statistics on preschool enrollment for 1974 are not given here in the following characteristics of hearing impaired children under six years of age (Demographic Studies, Gentile and Reis, 1970):

1. Total Preschool Enrollment
   Reported: 6,378
   Under age 3 years 336
   Age 3 and under 4 699
   Age 4 and under 5 1,865
   Age 5 and under 6 3,478

2. Type of Educational Program
   Day Classes 49.3%
   Residential
   School 21.9%
   Day School 18.2%
   Speech & Hearing Clinic 8.0%
   Other 2.7%

3. Degree of Loss and % of Preschool Enrollment
   30–45dB 3.5%

45–64 dB 11%
65–84 dB 30.3%
85 +
greater 55.2%

## DELIVERY OF SERVICES THROUGH COMPREHENSIVE REGIONAL PROGRAMS

Several of the large states are now struggling to develop a statewide plan of comprehensive, coordinated services. Regional programs are being planned within some states to provide an efficient network of comprehensive services, in order to utilize to the maximum the resources of the child's home, school, and community and yet not compromise quality education. This concept was discussed in the 1964 Babbidge report on the education of the deaf, but at that time such planning was not extensive. In the intervening decade, several states have made notable progress.

Components of comprehensive programs and services have been well described in various state and national reports, and these can serve as excellent guidelines for state planning. Major reports pertinent to state planning include The National Research Conference on Day Programs for the Hearing Impaired (1968), A Comprehensive Plan for Hearing Impaired Children in Illinois (1968), The Charge and the Challenge (1970), Recommended Organizational Policies in Education of the Deaf (1973), Understanding Our World (1974), The Sound and the Sign (1973), The Deaf Population of the US (1974), and Improving Services for the Handicapped with Emphasis on Hearing and Vision (1974).

In the past, services for the education of the hearing impaired have been fragmented among local schools, various day programs, and residential schools, with divided interests among various organizations and agencies. There now appears to be increased unity among these organizations to provide comprehensive, sound education for hearing handicapped children and youth and a recognition that such education of children is a joint venture by parents and schools. This unified effort may result in the development of statewide coordinated programing. In addition, state mandatory legislation has stimulated constructive action by strengthening the authority of state departments of education as responsible agents for handicapped children.

### Components of a Regional Program

Major components of programs for the hearing handicapped child are basically twofold: (a) they should include the same services of the educational program that are provided for all children, and (b) they should include all of the specialized services and programs to meet their needs as hearing handicapped children. Regional program models vary, but regional programs within a public school setting appear to have certain advantages, primarily (a) the use of public school facilities wherever possible thus avoiding duplication and increased costs, and (b) the close proximity to the child's home, school, and community, permitting increased opportunity for on-going child-parent involvement, interaction with peers and participation in community experiences. Most of all, educators must not overlook the emotional and social needs of children's lives. Every effort should be made to reduce the isolation caused by deafness no matter what the educational setting.

An adequate system of services to meet the special needs of the hearing handicapped would require a functional framework of interdisciplinary and ongoing evaluation as early as possible, a wide range of flexible program options from birth, an adequate number of competent teachers and support staff, an environment suited to auditory and visual needs of students and program continuity supervised and coordinated by experienced educators of the hearing impaired.

The size of a program base for deaf children was well described in *Recommended Policies in the Education of the Deaf* (Brill, 1973) as follows: For every 10,000 children with hearing enrolled in public schools, there are approximately 7.5 deaf children requiring special education to meet their needs. These 7 or 8 children with severe and profound hearing loss might range in age from approximately 5 to 18 years—the same age span of primary and secondary education. Since approximately two-thirds of the children enrolled in public school systems are on an elementary level, and the other third on a secondary level, one might expect to find in this hypothetical school population of 10,000 hearing children about 5 deaf children in elementary programs and 2 or 3 in secondary programs.

In applying the criteria outlined above to elementary and secondary programs, an important consideration is homogeneous grouping (assigning only one grade level to a teacher) and class size, with a minimum number of deaf children. Only very large school districts can support a secondary program for deaf children. Because of the importance of departmentalization and the level of the content fields, a quality high school program can rarely be provided for deaf youth with less than 15 qualified high school teachers. To justify the employment of 15 such secondary teachers, there would have to be 150 deaf pupils if, according to the criteria, each secondary class was held to a maximum enrollment of 10 students (Brill, 1973).

Maximum educational opportunities for hard of hearing and deaf children in a least restrictive environment will range from full participation in the standard public school program with appropriate support, to a segregated instructional program with guarded integration for most deaf children. Children mainstreamed into standard programs will be those able to use the auditory channel as their primary mode of instruction; through the use of amplification equipment or individual hearing aids, children for whom vision is the primary mode of instruction will receive primarily segregated instruction for specific subjects and for selected children. Deaf youth with substantial understanding of language may be able to effectively use an appropriate amplification system within these classrooms, or for some deaf youth at grade level, interpreters may be beneficial.

Variables to placement and instruction depend on many individual differences of children, functional aspects of degree of loss, age at onset of the handicap with prelingual deafness being a significant educational aspect, time factor between the occurrence of the loss and the time instruction was instituted, and a time factor of "prevocational deafness," which assumes a youth is deprived of basic learning in

varying degrees if the hearing handicap occurs any time during his educational life (Schein, 1974).

Mainstreaming, the new educational concept of standard class placement with supportive services, requires rethinking of present concepts for the instruction of children and youth capable of successful integration. The value of integration must be assessed for each student. There is no way of assuring success or failure; for some, integration is beneficial, and for others it is not (Kopp, 1971). Successful integration or mainstreaming for any hearing impaired child would also necessitate increased attention to school construction dealing with acoustic, visual, and safety features (Stepp, 1972). An outline of guidelines for integration of students has been prepared for school districts by the Conference of Executives of American Schools for the Deaf in Recommended Organizational Policies in the Education of the Deaf (Brill, 1973).

**Examples of Regional Programing**

In several states comprehensive programs and services for the hearing impaired are emerging as a priority. Among these states are New York, California, Massachusetts, North Carolina, Texas, and Illinois. While the types of programs differ widely and have different types of administrative structures, all are attempting to provide programs and services on a regional or statewide basis. As previously stated, the objective of regionalization is to maximize the resources of the child's home, school, and community and coordinate regional and state services with those of general education.

**New York** operates the New York School for the Deaf at Rome and supports eight private schools located geographically under provisions established by law and operated by the commissioner of education (Hehir, 1973). Also, New York City now has a commission for the hearing impaired (Harrington, 1973) to assist in the planning and implementation of needed programs and services.

**California** maintains two residential schools for the deaf and a number of well established day schools and area programs. All public facilities, day and residential, preschool through junior college, are under the direction of the state department of education and the state board of education. Each district having a child enrolled in a state residential school is billed annually for an amount per child equal to the taxes allocated for a normal child. All facilities must meet the same standards for education and service (National Research Conference on Day Programs for Hearing Impaired Children, 1968).

**Texas** passed Senate Bill 805 in 1973, amending the Texas Education Code by providing for "apportionment of the State into areas furnishing Regional Day School Programs for the Deaf; vesting authority in the Central Education Agency to conduct such school programs, providing for financing, cooperation of school districts and institutions of higher learning and declaring an emergency."

The bill briefly outlines the provisions of operation, children to be served, coordination between regional schools and state residential schools, provisions for both oral and total communication, instructional programs, and an estimate of the cost per child (about $2,700). It also provides for the employment of regional school superintendents and for the Central Education Agency to employ a director of deaf education and other essential personnel (Senate Bill 805, State of Texas General Assembly, 1973).

**Illinois** is implementing comprehensive regional programs and services within the framework of the public school program. These were first initiated under the 1964 revisions of the State Department Rules and Regulations of Special Education which established a six class minimum standard for program size, evaluations and supervision; and then progressed to comprehensive regional planning through the 2 1/2 year study reported in A Comprehensive Plan for Hearing Impaired Children in Illinois (Hiett & Stewart, 1968).

There are now 12 regional programs each with an approximate population base of 150,000 children who range in age from birth to 21 years. In addition, Chicago serves as a region with a child population of about a million children. Regional programs serve a statewide total of about 3,000 children; every program now has an educational coordinator of the deaf and hard of hearing responsible for the planning and development of the program, and each has an evaluation center including an audiological suite and staff.

To date, construction of facilities includes a new high school complex for the hearing impaired within a large high school in Chicago, 1974; a preschool and elementary complex for an 11 county area in a semi-urban area in Mid-Central Region, 1972; an appropriation for a facility to serve the Southern Region of 27 counties, 1973. There is also a new high school facility at the Illinois School for the Deaf, 1973.

A Legislative Commission (Senate Bill 1538 of 1973) is currently reviewing state needs, including administration and finance.

**North Carolina** in addition to its mandatory law for comprehensive programs and services to all handicapped children, passed two bills for the hearing impaired. House Bill 1331 of 1973, an amendment to bills enacted in 1969 by the General Assembly, authorized the Department of Human Resources to establish a preschool satellite program for the deaf and educationally hard of hearing. The bill authorizes the State Superintendent of Public Instruction and the State School Board to establish a joint program with the State School for the Deaf for a system of preschool programs for deaf children, aged 1 to 6 years.

The General Assembly in 1969 authorized a program for hard of hearing preschool and school age children, which included instructional apparatus and equipment and salaries for trained personnel.

In 1974 the General Assembly ratified Senate Bill 1362, Chapter 1422, An Act to Create a Permanent Legislative Commission on Children with Special Needs. This commission reports directly to the General Assembly during the first session of each year. Also in 1974, through Senate Bill 1238, the General Assembly ratified An Act to Establish Equal Educational Opportunities in the Public Schools. North Carolina has the framework to develop a sound program for the hearing impaired as part of the comprehensive educational program for all children under this mandatory law.

**Massachusetts** has taken definite

action to establish, through the Bartley-Daly Act of 1972, comprehensive special education laws.

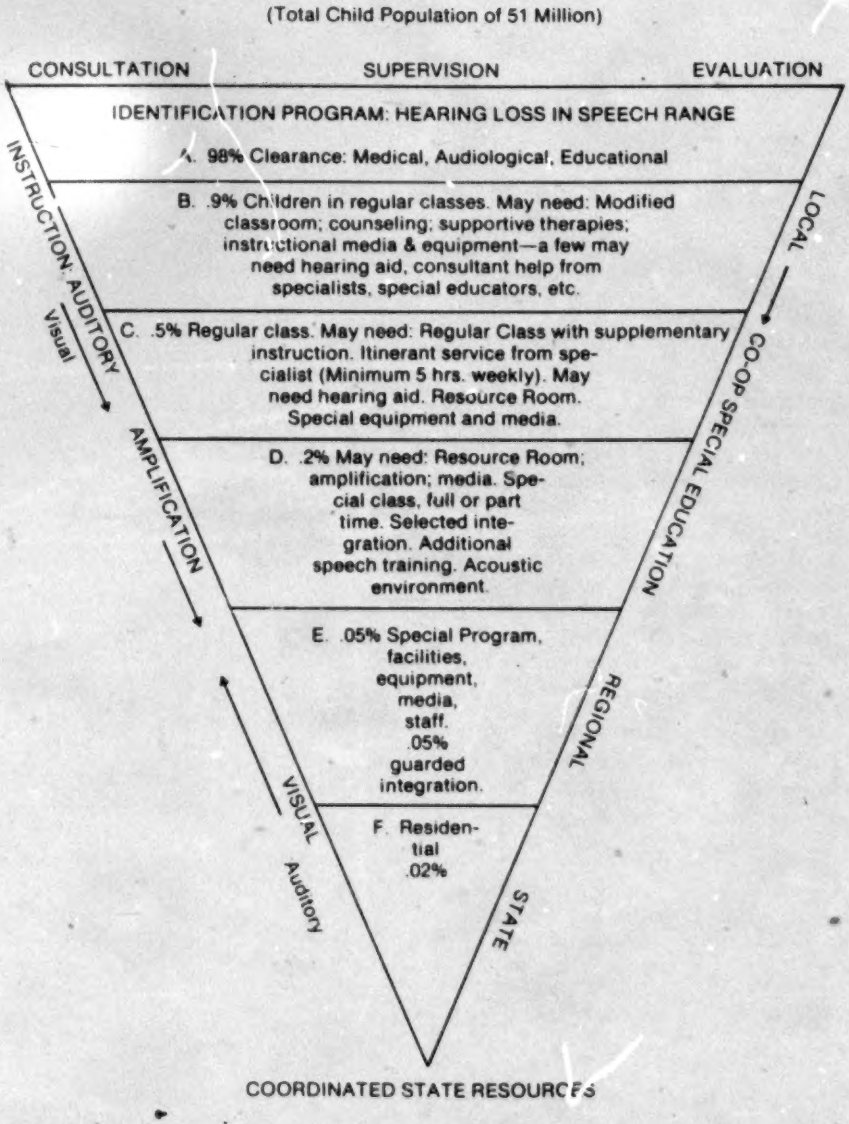
An important and unusual feature is the requirement that the laws be jointly promulgated by the Department of Education, Mental Health, Public Health, and Youth Services. The Rules and Regulations, among its other provisions, outlines procedures for identification, referral, and evaluation, as well as specific provisions for programs and a framework for administration of regional programs for children with severe disabilities. Specific to administration is a design for regional advisory councils, regional review boards, a state review board, and a state commission on the handicapped. Membership in the councils is approved by the state school board. The regional council has 17 members, of which 8 are parents from different educational areas, and 9 are professionals and community leaders, with one member from The Massachusetts Council for Exceptional Children. The Rules and Regulations outline program, training of personnel, duties, and responsibilities.

**A DELIVERY SYSTEM FOR CONTINUUM OF EDUCATIONAL PROGRAMS AND SERVICES**

Basically this continuum of services includes the same programs and services desired for all children plus services to meet the specialized needs of hearing handicapped children and (a) a system of early case finding of children with special needs, and (b) appropriate environment educational opportunities, in the least restrictive educational program. Most of all, educators must not overlook the emotional and social needs of children's lives.

Comprehensive regional programs and services would require a continuum of program options providing a network of teaching environments with up to date technology, equipment, and staff to meet the wide range of differential needs of children in the region, ranging from mild to profound.

Regional programs and services (Figure 3) would include provisions for hearing impaired children with a wide range of mental abilities as well as children with other handicapping conditions. Team teaching and other programing can take place in an integrated or modified classroom or in a variety of other settings if the environment is adequate, if children are compatible, and if teachers are knowledgeable. Many children formerly attending residential schools might well be educated in regional programs if comprehensive services could be developed. A network of programs would be needed, including modified classrooms and supportive services, home teaching, various types of itinerant programs, resource rooms, teach teaching situations, clustered units, and centralized programs, keeping in mind the need for specialized auditory and visual materials, equipment, suitable environment, and experienced personnel. For some children, residential schools for the deaf or other types of resident programs are more suitable. The main point is that regional and state facilities and services must be coordinated.


(Total Child Population of 51 Million)
CONSULTATION
SUPERVISION
EVALUATION
IDENTIFICATION PROGRAM: HEARING LOSS IN SPEECH RANGE
A. 98% Clearance: Medical, Audiological, Educational
B. .9% Children in regular classes. May need: Modified classroom; counseling; supportive therapies; instructional media & equipment—a few may need hearing aid, consultant help from specialists, special educators, etc.
C. .5% Regular class. May need: Regular Class with supplementary instruction. Itinerant service from specialist (Minimum 5 hrs. weekly). May need hearing aid. Resource Room. Special equipment and media.
D. .2% May need: Resource Room; amplification; media. Special class, full or part time. Selected integration. Additional speech training. Acoustic environment.
E. .05% Special Program, facilities, equipment, media, staff. .05% guarded integration.
F. Residential .02%
INSTRUCTION: AUDITORY
Visual
AMPLIFICATION
VISUAL
Auditory
LOCAL
CO-OP SPECIAL EDUCATION
REGIONAL
STATE
COORDINATED STATE RESOURCES

Note: Adapted from:
Deno Model (1973)
Illinois Low Incidence Study (1973)

FIGURE 3. Guidelines for a Continuum of Regional Programs and Services

Program continuity and supervision are of utmost importance.

Sparcely populated states will have greater difficulties in providing regional type services. Some such as Wis[illegible]ming may be able to deve[illegible] around population centers on an interstate basis through boarding home service during the school week; others may need full time residential placement.

**INSTRUCTIONAL METHODS**

For many years there have been conflicting philosophies on the best methods of teaching deaf children in order to close the wide educational gap between deaf and hearing children by (a) developing an effective language learning system as early as possible, and (b) developing an effective communication system having the least possible isolation from the deaf and hearing community. Methods now in use including both oral and manual systems are described as oral-aural, acoupedic, simultaneous or combined, cued speech, and total communication. There has been more open discussion of these divergent views by professional organizations and joint participation in professional activities and concerns of mental health, such as those emphasized at the National Convention of the Alexander Graham Bell Assoication Chicago, 1971; The Council for Exceptional Children, Division for Children with Communication Disorders 1971 and 1972; and the joint participation in the national standards for teachers of the hearing impaired by the three organizations within the Council on Education of the Deaf, 1972.

The most recent national research of a combined system of instruction (speech and finger spelling) Quigley (1968), indicated that the research, "did not represent what might be termed a significant breakthrough that could lead to the elimination of this gap. Rather, the use of fingerspelling emerged in the study as a tool that could be utilized in making substantial advances in the education of children who are deaf." Now in progress through HEW is an extensive study of preschool children in programs utilizing different instructional systems (Moores, 1970).

It is the intent of comprehensive programs to provide children with the proper combination of auditory-visual instruction according to their individual needs. Major auditory-visual components of all instructional programs include: oral, speech reading, auditory with amplification, fingerspelling and the language of signs, graphics, reading, auditory-visual technology and instructional media. Comprehensive instruction for all hearing impaired children will range from a strong auditory approach with visual supplement to a strong visual approach with auditory supplement (see Figure 3). States are attempting to meet this need in different ways. The comprehensive plan for regional programs in Illinois (Hiett & Stewart, 1968) describes its instructional plan as follows: For the majority of hearing impaired children the auditory channel, even though defective, will be the primary modality for learning, and full use should be made of special media, amplification, and training of residual hearing at home and at school. For other children the primary avenue of learning will be visual, and combined visual methods of instruction should be considered using both oral and manual communication systems of fingerspelling and signs, at home and at school.

It would be expected that a comprehensive program would have a continuum of services and full range of effective instructional options. Evaluations of children must be on-going, interdisciplinary, and with a commitment to parent education. Parents may become more confident of recommendations for their children if both auditory and visual systems of instruction are available within the same program. One thing is certain: There can be no effective instructional program for children by any method as long as other critical inadequacies continue to exist. This means a new commitment by professionals and organizations to comprehensive state planning for all hearing impaired children and a certainty that all components are included from the earliest age possible that can maximize children's learning potential, and their communication skills and environmental competence with both deaf and hearing individuals.

**Recent Developments**

Other factors of teaching and learning are now receiving attention, such as the fact that learning theories can be applied (Kopp, 1971). There is attention to classroom teaching through teacher competencies and teaching skills (Hammermeister & Baldwin, 1973), to curriculum as a sequentially developed learning experience (Kopp et al., 1970), and to the language curriculum of Blackwell (1971). Also of interest is the preschool research now in progress (Moores, 1971) which identified the common denominator of child progress to be a "well structured curriculum," and most recently, the thrust in career awareness and career education from kindergarten thru secondary age level as set forth in 1973 by the US Office of Education (Marland, 1973).

Instructional technology has been greatly accelerated through the use of captioned films promoted by the federal government. However, other materials specific to the hearing impaired are on the market but slow to reach classrooms (Gallagher, 1972). An example specific to the deaf is Project LIFE (Language Instruction to Facilitate Education) prepared in part by the federal government and using specialists from across the country. Purchases were made primarily by large city schools through the use of Title I funds and by state schools for the deaf, as reported by General Electric in 1972. Smaller districts seemed unable to make purchases because of limited funds (Harrington, 1971).

Speech laboratories and specially trained communications personnel seem universally absent from educational programs for the deaf—even though some training aids are available (Pickett, 1971; Ling, 1971). Despite the severe problems of hearing handicapped students in speech intelligibility, only very minimal services are provided on a consistent basis by skilled personnel. This applies to both deaf and hard of hearing children.

The learning environment is being considered as an integral part of the educational program. This includes up to date group amplification systems and individual aids; the acoustic treatment of school facilities, both in classrooms and in integrated areas; and attention to electric safety features, both acoustic and light systems (Stepp, 1969; Wadley, 1969; Matkin, 1970;

Mann, 1971). Thus, if hearing impaired children are to be successfully integrated into school systems, new regulatory provisions for auditory, visual, and safety features of schools must be written into states' school codes.

**ADMINISTRATION AND FINANCE**

The effective delivery of services to hearing impaired students by any type of plan will necessitate major changes in administration and finance in most states to maximize administrative responsibility and the use of state and federal funds.

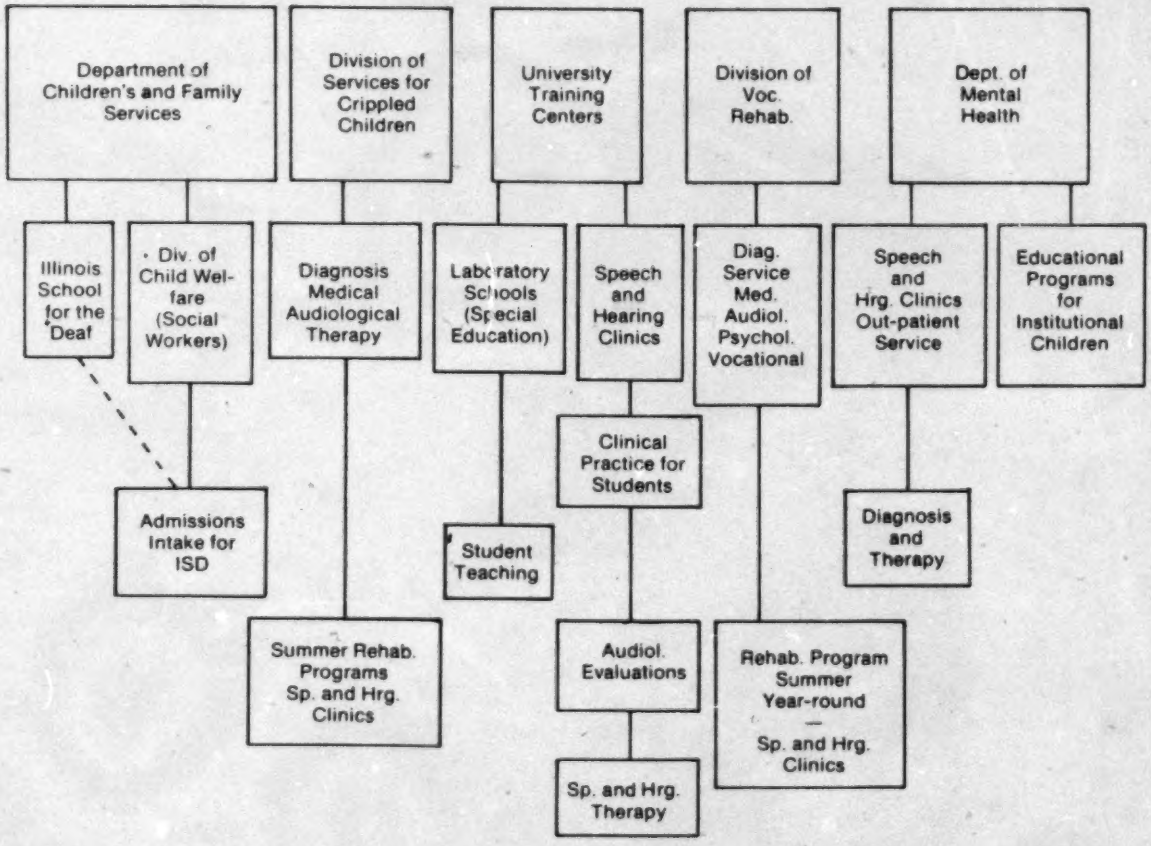
The four main *administration problems* are as follows: First, there is an extreme shortage of educators of the hearing impaired in key positions; only 13 state departments employ educators of the deaf. In 18 states, the education of hearing impaired children is administered by the speech and hearing clinician; 10 states have neither of these; and few states have local or regional coverage by educational supervisors.

Second, administration between public and state school programs is sometimes separated. There are 23 state schools for the deaf administered by state departments of education and 27 administered by other agencies. This separation creates problems in coordinating services for children. Even where mandatory laws exist, the law usually applies only to those services under state departments of education.

Third, coordination of educational services is lacking among other state governmental agencies and organizations. In Illinois for example, five different state agencies or organizations (other than the state department of education) are dealing independently in the education of the hearing impaired, and planned coordination among them is difficult (Mulholland, 1968) (see Figure 4).

Fourth, a regional administrative and financial framework for comprehensive services within states needs to be established to authorize responsibilities and provide for disbursement of

A Problem in Coordination. (To this figure might be added the private day and residential schools)


Department of Children's and Family Services
Division of Services for Crippled Children
University Training Centers
Division of Voc. Rehab.
Dept. of Mental Health
Illinois School for the Deaf
Div. of Child Welfare (Social Workers)
Diagnosis Medical Audiological Therapy
Laboratory Schools (Special Education)
Speech and Hearing Clinics
Diag. Service Med. Audiol. Psychol. Vocational
Speech and Hrg. Clinics Out-patient Service
Educational Programs for Institutional Children
Clinical Practice for Students
Admissions Intake for ISD
Student Teaching
Diagnosis and Therapy
Summer Rehab. Programs Sp. and Hrg. Clinics
Audiol. Evaluations
Rehab. Program Summer Year-round — Sp. and Hrg. Clinics
Sp. and Hrg. Therapy

(National Research Conference on Day Programs for the Hearing Impaired, 1968, Mulholland & Fellendorf.)

FIGURE 4. Illinois State Agencies Offering Educational Services Other than the State Dept. of Education

funds. School districts are unable to serve children with severe low incidence handicaps without a sizable population base necessitating a different organizational structure, which is nonexistent in most states. Also needed are legislative changes between states for joint programing at population points on state boundaries so that programs can be established across state lines.

There are three main financial problems. First, insufficient and unequal funding patterns of both day and residential schools cause inequities in necessary educational services. A New York study of 35 day and state supported schools reported that present state and federal funds were sufficient (Harrington, 1971). City schools reported that funds were insufficient especially for construction, equipment, and instructional technology. Smaller schools reported insufficient funds for all services.

Second, funding patterns of state residential schools show wide variations and inequities. Annual per capita costs ranged from $2,261 to $7,412 with 23 states spending between $4,500 and $5,500. These expenses are funded in most states at 100% of the costs, in addition to funding of building costs (Directory, American Annals of the Deaf, 1972). Federal funding per state school ranged from $6,097 to $503,273 as reported in the Directory of Programs and Services, American Annals of the Deaf, 1973.

Third, funding patterns for special education programs reflect a wide variation in regional programing for the hearing impaired for transportation, construction, evaluation services, equipment, instructional media, personnel, and ongoing program costs. The following brief summaries point up important differences among states. These were obtained from the Directory of Programs for the Deaf, American Annals of the Deaf, 1972, from state bulletins, and from personal contacts with state departments of special education.

- California
  Day programs under special education: Reimbursement formula totaling about $17,000 per special education class (6 to 8 students) for teacher, equipment, media, and school aid; $1,300 for home and hospital tutoring; $1,018 for hard of hearing in regular classrooms, transportation up to $389 annually per child.
  State residential schools: Annual per capita costs $6,909 and $7,364, including residential living, 100% state support with local support in amount of tax effort for normal child; federal funds, 2 schools $140,000 and $130,000.
- Wiconsin
  Day programs under special education: 70% of teacher salary; 70% equipment and media; 100% boarding home; 0% transportation.
  State residential schools: State support 100%; annual per capita costs $5,700 including residential living; federal funds $103,725.
- Michigan
  Day programs under special education: 75% teacher salary to $8,100; 75% of equipment and media; transportation 75% to $200.
  State residential schools: State support 100%; annual per capita costs $7,934, including residential living; federal funds of $284,580.
- Indiana
  Day programs under special education: 50% teacher salary; 0% equipment and media; transportation 80% up to $2.00 daily.
  State residential schools: State support 100%; annual per capita costs $4,200, including residential living; federal funds of $152,993, plus $61,850 other.
- Nevada
  Day programs under special education: State reimbursement formula of about $600 per child.
  State has no residential school; pays the out of state tuition.
- Illinois
  Day programs under special education: $6,250 per teacher; 0% for equipment and media; transportation 80%.
  Regional evaluation centers: About 80% of ongoing costs from state reimbursements and Title VI money.
  State residential schools: State support 100%; annual per capita costs $6,545, including residential living; federal funds $202,247; other $74,108.

## RECOMMENDATIONS OF THE NATIONAL ADVISORY COMMITTEE TO HEW

The National Advisory Committee to the Secretary of Health, Education and Welfare emphasized in its annual report, Basic Education Rights for the Hearing Impaired, 1973, the following recommendations:

1. An individualized program of instruction and services at whatever age and in whatever educational setting to decrease the possibility of solation from society and maximize a sense of personal well being, good citizenship and economic usefulness of deaf individuals.
2. Early educational programs for deaf infants and their families as soon as a hearing loss is identified.
3. Proper placement of a deaf child including neighborhood school, special schools, special classes, and/or residential schools.
4. The opportunity to develop a comprehensive range of communication skills, which allows the deaf child to operate as a citizen with maximum efficiency.
5. A program of career education, from the earliest age, which emphasizes the work ethic and independence. All deaf children or youth leaving school should be prepared to enter the work force or continue advanced preparation.
6. Informational and cultural avenues which are fully available to the deaf as well as the hearing population. Telecommunication devices should be accessible to the deaf at the same cost as telephones are to the hearing person. Captioned television and motion pictures should be expanded to include at least 80% of those available to the general public.
7. Special public or private institutions, schools, or agencies that provide preschool, primary, secondary, and postsecondary education which allows deaf youth to develop their maximum academic and technical skills through the following services: (a) service to the student's teachers (regular classes), (b) supplementary instruction and therapy, (c) part-time special classes: resource rooms, full-time

special classes, (d) day or residential schools, and (e) home and hospital instruction.

The committee is concerned that all the deaf be included in the educational program, i.e., the deaf-retarded, deaf-blind, and multiply handicapped, and that deafness itself must be viewed as the primary handicap in all respects. The committee further recommends that "all state education agencies develop comprehensive state-wide plans for education of all deaf children and adults. No deaf person in the United States of America should be forgotten."

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